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Multimedia:
The Case with the Army's
Single Exercise Analysis System Prototype

by

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Submitted in partial fulfillment
of the requirements for the degree of

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ABSTRACT

This thesis designs and implements a multimedia prototype of the Single Analysis Exercise System (SEAS) for the Army TRADOC Command, Monterey, CA. SEAS is intended to assist an Army analyst in constructing an exercise scenario for a battle simulator, Janus(A). The purpose of the multimedia prototype is to provide the user with an integrated digital platform for battle analysis and scenario generation. The immediate benefits of this study will be a significant reduction in the time required to generate a scenario for Janus(A) and will allow the analyst to complete analysis at one workstation. Also, it is expected that the prototype will enhance the quality of the scenario generation process.

c.1

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I. INTRODUCTION

A. RESEARCH OBJECTIVES

This thesis is part of a larger project sponsored by the U.S. Army TRAC-Monterey. The purpose of the project is to analyze, design, implement and verify the effectiveness of a computer prototype that enhances the battle scenario generation of a battle simulator - JANUS(A). The process of collecting data for battle scenarios is a tedious one that requires combinations of paper documents, floppy diskettes, video tapes and computer databases. The analyst in charge of creating a battle scenario for the simulator has to spend a significant effort to browse through this multimedia environment. The purpose of this thesis is two-fold; one to integrate the take home package with the Task Force Action Summary tape using hyperlinking, and the other to integrate modules created by other thesis efforts onto one platform.

B. RESEARCH FOCUS

This thesis explores the use of multimedia technology to help enhance this data gathering and analysis process by providing a unique and computerized multimedia platform. The SEAS prototype is a culmination of the efforts of many people. This thesis focuses on a multimedia module which will integrate the Task Force Mission Summary tape, the associated

Ingres databases, and the ASCII diskettes of the take home package. This module will also interface with an external system within the SEAS environment, the Forces Update Expert System. [Ref. 1]

C. EXPECTED BENEFITS

This integration will allow a centralized repository of information from three different types of media (i.e., videos, databases, and floppy diskettes). The accuracy of the generated scenarios will be greatly improved, and analyst time can be freed up for more productive purposes. An analyst will be able to operate at one workstation to generate a scenario for Janus(A).

D. METHODOLOGY AND SCOPE

Multimedia is about mixing text, images, voice, music, sound effects, animations, and video. By using multimedia in the SEAS prototype, an analyst can receive multiple combinations of information on one screen using windows. Attention is directed to information necessary to complete a Janus(A) scenario without having to reference data outside the system.

Hyperlinking, a method of navigating to allow an analyst to view information in a non-sequential fashion, is used as a pathway to exit from the Task Force Action Summary video tape to access additional information in the take home package.

That is, the analyst creates his own path through the information of the take home package by "clicking" on key words. [Ref. 2]

The prototype will use object-oriented multimedia facilities, in which all forms of data – sound tracks, images, documents, videos, and application software – will be stored as objects thus allowing the data to be shared and re-used.

A multimedia "authoring" software product, IconAuthor™, will be used to design the model. IconAuthor™ will combine the Task Force Summary Tape's graphics and audio, text from the take home package, and information from the Army's Ingres database.

E. ORGANIZATION

Chapter II of the thesis discusses an overview of multimedia. Chapter III discusses possible uses of multimedia for the SEAS prototype and proposed design considerations. Chapter IV outlines specific requirements for the SEAS multimedia interface. Chapter V addresses the SEAS prototype. Chapter VI describes multimedia components used for the prototype. Chapter VII provides the steps to building another Task Force Action Tape module. Lessons learned are provided in Chapter VIII.

II. AN OVERVIEW OF MULTIMEDIA

A. WHY MULTIMEDIA?

Multimedia is a platform – a combination of hardware and software elements that support a multisensory information environment. Within five years, "multimedia" will no longer be only available to the few, because this technology will be fully integrated into personal workstations, applications, and, in fact, into standard methods of doing business. In 1996, the term multimedia will become just another word of the past, just as today no one talks about the "graphics PC" as in 1985. [Ref. 3]

Multimedia is the most logical solution for solving the Army's multiple media dilemma. It currently takes an analyst approximately 300 hours to assimilate accurate task force mission information from various media types. [Ref. 4] The proper use of audio and video will enable a greater understanding of this information for analysts, and, at the same time, make that information more accessible to a larger number of people who currently get lost in the raw data.

This thesis employs the use of a multimedia personal computer, which consists of seven basic components: a PC, a CD-ROM drive, an audio board, a live motion video board [Ref. 5], multisync monitor, Microsoft Windows graphical

environment with Multimedia Extensions [Ref. 6], and a set of speakers for audio output [Ref. 7].

B. MULTIMEDIA METHODOLOGIES

Methodologies for designing multimedia products are, at best, still in their infancy. As a matter of fact, the most common way to design an application is to read the manuals that come with whatever software product that is being used, and follow the software designers suggested step-by-step method to using their software.

This prototype was created using Sprague and Carlson's ROMC approach for developing a decision support system (DSS). [Ref. 8]. ROMC, meaning representation, operations, memory and control, is an approach to systems analysis for articulating system performance requirements. Although this prototype is not a DSS, the methodology for design lends itself nicely to this application.

C. HARDWARE REQUIREMENTS

The hardware components necessary to have a multimedia personal computer are listed below. These are the **minimum** requirements. [Ref. 9]

1. Base System

- 80386SX or higher processor with clock speed of at least 16 Mhz
- 2 MB of RAM

- 30-MB hard disk
- A 3.5 inch 1.44MB floppy drive
- A color monitor (recommended)
- A 101-key keyboard
- A two-button mouse
- Serial and parallel ports
- MIDI I/O port
- Joystick port

2. Video Graphic Adapter

The graphics adapter allows computer-generated text and graphics to be displayed, such as scanned images and animations. The better quality the monitor, the better the end result. Because the requirements for graphics are so much greater with a multimedia system, the monitor and board must be of VGA or greater quality.

3. Live Motion Video Card

Although not a requirement for a multimedia PC, the live motion video card, or video adapter, is necessary to view live video. All video adapters accept input from some National Television Standard Committee (NTSC) source and display it on the PC's monitor. Some boards serve as videodisk or VCR controllers. The more sophisticated of these boards convert analog video to digital video so that it can be displayed in a window on the monitor and special effects can be applied to the images. Some boards serve as a two-way link

between the PC and the VCR source, allowing computer-generated images to be recorded on videotape.

4. CD-ROM

For proper performance, the transfer rate must be at least 150K of data per second without taking up more than 40 percent of the CPU's attention. The drive must play CD audio, and have an average access time of 1 second or less.

5. Audio Device

A sound, or audio board, is one of the most valuable components in a multimedia system. The added sense of sound virtually wraps itself around the user, capturing his attention and actually brings the user closer to the information being displayed on the screen.

There are two types of audio, CD- and waveform audio. CD-audio is also known as digital audio. They have the same format and quality as the disks played in a CD player. CD-audio sounds have been digitized at a sampling rate almost high enough to duplicate reality. Waveform audio is also a form of digital audio, but unlike CD-audio, it is stored in a form that the PC can understand and manipulate. An input device, such as a microphone, cassette player, or CD player, is used with an audio board having digitizing capabilities. The audio board encodes and stores sounds on the hard disk. Some audio boards can sample at a high enough rate to create CD-audio quality files. During playback, the sounds pass back

through the audio board, which reconverts them to an analog representation and then sends them out through the speakers. For recording, the audio board must support 8-bit samples at a 11.025 Khz sampling rate. For playback, it must support 8-bit samples at 11.025 Khz and 22.05 Khz sampling rates. The board must have a music synthesizer and on-board analog audio mixing capabilities.

D. SOFTWARE REQUIREMENTS

DOS was chosen to be the operating system for the prototype because the other SEAS modules were already written for DOS [Ref. 1, 10]. For its advanced capabilities, DOS 5.0 is highly recommended, although any DOS 3.1 or higher will do.

For a multimedia PC, Windows 3.0 with Multimedia Extensions Version 1.0 or Windows 3.1 is a must. Also, MS DOS CD-ROM Extensions (MSCDEX) version 2.20 or later with a compatible drive is necessary. This software is usually included with the sound board's software.

To produce multimedia presentations, an "authoring" or multimedia presentation software to put it all together would save the programmer a large amount of time. An extensive search in the current market produced a number of multimedia software products; however, there was not a product available that meets the programming requirements necessary for the prototype. Lack of a hypertext capability, or immature hypertext was a weakness in all of them.

AimTech's IconAuthor™ was chosen to be the authoring software for this thesis. Hypertext capabilities will be available in the next release of the software. IconAuthor takes a flowchart approach that lets the author, or programmer, specify the elements necessary to incorporate and string them together in the order they should appear.

III. DESIGN METHODOLOGY

A. BACKGROUND

The Army analyst accesses the Ingres database, the take home package, and the video tapes that are supplied with each task force mission. This prototype must integrate all data into a product that the user will find easy to use. An Army analyst needs to obtain information quickly and should not be faced with distractions. For example, long periods of audio (music or voice) that cannot be terminated can become an irritation. The user needs to work with easy-to-access information. This prototype was not designed to be fancy, but rather to provide needed information in the most direct manner.

An Army analyst can use this platform to accomplish all tasks required to create a Janus(A) scenario. The system allows access to the Task Force Action Summary tape, the NTC Digital database, the Total Forces Expert System, the Route Determination module, and the ability to combine all these inputs to create Janus(A) input files.

B. A ROMC APPROACH TO DESIGNING MULTIMEDIA APPLICATIONS

Although this prototype is not a decision support system, per se, it supplies the other modules with information so that proper decisions are made for creating a Janus(A) battle

scenario. With that in mind, a ROMC approach was used to design and implement the multimedia platform. The approach is based on four concepts: Representations, Operations, Memory Aids, and Control Mechanisms. The capabilities of the system from the user's point of view are to provide *representations* to help conceptualize the training scenarios – to provide a means by which users can interpret the battle outcomes and invoke operations; *operations* to analyze and manipulate those representations; *memory aids* to assist the user in linking the representations and operations – The NTC digital database is a memory repository for data compiled from training missions; and *control mechanisms* to handle and use the entire system. Control aids are intended to help analysts use representations, operations, and memories to generate battle scenarios. [Ref. 8]

IV. REQUIREMENTS ANALYSIS FOR SEAS MULTIMEDIA INTERFACE

A. REPRESENTATION REQUIREMENTS

The Task Force Summary Action tape is used by an Army analyst to quickly refresh his memory on the mission of the task force and the results of the battle. The take home package, in both hard copy and digital format, is also an asset used to provide information about the mission. These two components should be combined onto one platform to give the analyst a complete picture of a mission. Scenes from the tape and audio portions should be used to give the analyst an immediate feel for the mission. While the user is reviewing portions of the video, he should have a mechanism for hyperlinking to portions of the digital take home package that will supply more in-depth information about what he just saw. After reviewing pertinent portions of the take home package, the execution of the program should resume at the place where he originally branched.

The video should be segmented into portions that are logical to the army analyst and should be readily accessable from every screen. The screens should be consistent in design with menu selections always in the same location on every screen. Additionally, the user should be able to access any segment of the Task Force menu on all task force screens.

Time should not be wasted by the user having to "back out" of screens to get to a destination.

In areas where appropriate, the audio should be used from the Task Force Action Summary tape. These audio portions will capture the army analyst's sense of sound and will make the information more meaningful. If the analyst "speed reads" the screen, he may advance to another section of the prototype without being forced to "listen" to the audio segment. If the analyst must do other things, the audio portion would be a nice feature which would allow him to listen while he is thumbing through other material.

An integration of all necessary components must be readily available to the user in one location. That is, the main menu needs to be the master console of the system, with external systems being accessable from that one screen.

B. OPERATIONS REQUIREMENTS

The data is currently collected and documented at the Army's training sites. Due to the process of transcribing the information, numbers may be transposed or misread when recorded to digital format. That is, instead of recording 21 tanks being attrited, 12 tanks may be erroneously documented. This type of error occurs more frequently with the take home package, but also occurs in the Ingres database. The video usually does not have such errors because it is created immediately after the actual task force mission.

The use of windows in a multimedia environment offers an excellent way to verify the correctness of the task force mission information. The video may be run in one window, while the Ingres database is displayed in another. A third window may be used to show segments of the take home package. Additionally, in listening to the tape's audio, the written information in the video may be incorrect, or vice versa.

C. MEMORY REQUIREMENTS

The information viewed in the Task Force Action Summary module should be used in part to reinforce the accuracy of the data in the Ingres databases. Since two or more windows may be opened at the same time, changes made to the information is immediately stored without the use of memory variables, as in a decision support system.

D. CONTROL REQUIREMENTS

Through use of the many pathways to all internal and external interfaces provided on the main menu, the user should be able to control manipulation of all data. Additionally, the following should be considered:

- The "Create Janus(A) Input Files" button should provide the user with the ability to combine all the files previously created or edited before input to Janus(A).
- The user should have access to edit the Ingres database.
- The user should find the Task Force Action Summary easy to navigate with the vast number of consistantly placed buttons.

- The user should have access to help screens explaining the use of the system.

E. FUNCTIONAL SPECIFICATIONS

1. Screen

If video is to be used in the Task Force Action Summary, the resolution of the monitor can be no greater than 640 x 480 per window and should be able to handle multiple windows. A 19" monitor would allow IconAuthor to display in a full 640 x 480 window and the video to display in its own sizeable window.

The file format of the screens should be considered for storage purposes. Compressed files take up less space on hard disks and are more transportable.

2. Audio

The audio must meet the minimum requirements of a multimedia PC. (See Chapter II, section C, subsection 5.)

3. Hyperlink

The multimedia software package chosen must have hypertext capabilities to allow the Task Force Action Summary video and the take home package to be integrated.

4. Systems Interfaces

Although not extensive, there are some system interfaces which must be considered:

- A VCR and overlay card compatible with the multimedia software package are necessary to display the Task Force Action Summary tape.

- A communications package is necessary to access the Ingres database at ARI-POM, Monterey.
- The system must be windows-based and have multitasking capabilities to navigate between different media for information processing.

V. A SEAS MULTIMEDIA FRONT-END PROTOTYPE

As previously discussed, three different types of media must come together to enable the analyst to do his job in an efficient manner. Figure 1 shows the interface that is necessary for this front-end prototype.

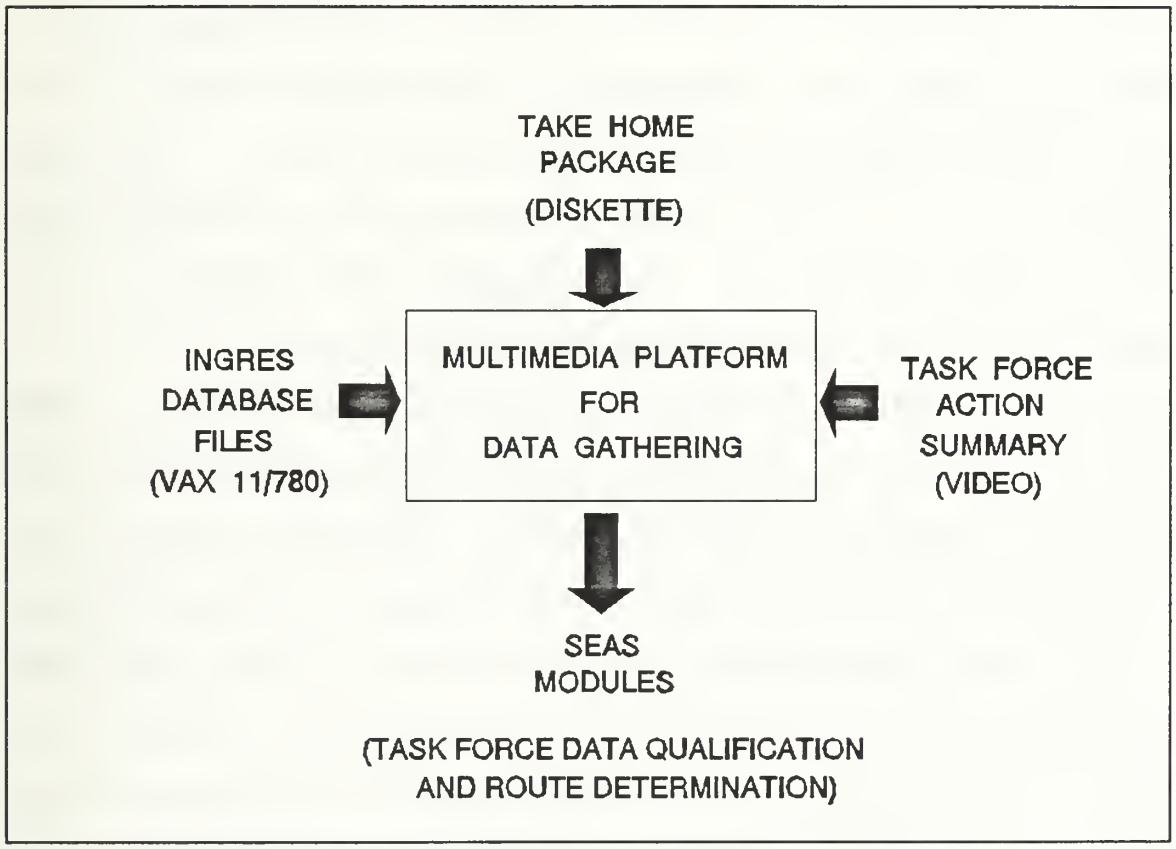


Figure 1. Multimedia Interface for SEAS

The prototype focuses primarily on the integration of the video tape and the take home package; however, the main menu allows interfaces to the Ingres database, the Forces Update

Expert system, the Route Determination module, and the operating system.

A. TASK FORCE ACTION SUMMARY

This module was formed around the Army's Task Force Action Summary tape which is approximately 7 minutes in duration and summarizes the mission. The quality of the tape is fair. Letter representation is poor and cannot be optically scanned. Several frames were captured and an OCR scanning program was used to attempt a scan of the information. The busy background (a terrain chart) and the white lettering with black shadow prevented a readable scan, even though the OCR scanning software was sophisticated enough to be "taught" any font. An attempt was made to capture scenes from the tape and import them to the prototype. The scenes were too fuzzy to permit a professional looking product. Therefore, charts were reproduced in Windows PC Paintbrush for use in the prototype.

The Task Force Action Summary module divides the Task Force Action Summary tape into five categories: Situation, Mission, Battlefield Operating Systems, Critical Events during Mission, and Mission Summary Statistics. (See Appendix A).

1. Situation

The Task Force Action Summary tape opens with enemy and friendly situations to set the stage for the battle engagement. In keeping with this tradition, this is the first button selection on the Task Force Action Summary menu. The

prototype uses eight screens to depict the situation segment. Because the proper video overlay card was not available for displaying live portions of the video, the screens were manually reproduced using PC Paintbrush. Although the hand drawn charts were not to scale, the audio portion (42 seconds) from the tape describes the details accurately for a complete picture.

2. Mission

The mission segment of the tape was divided into four sections: mission statement, combat potential, task force organization, and commander's intent.

a. Mission Statement

Although a mission statement is provided for the Task Force, one also exists for each team and company, along with each Team/Company's plan of execution, preparation for engagement, execution of plans, and lessons learned. The take home package is incorporated into this section to provide each Team/Company's mission statement. Hypertext capabilities were not included in the version of IconAuthor that was used. Therefore, a take home package symbol, a purple box with the letters "THP", was displayed on several screens that would allow access to selected segments of the take home package. This "look-a-like" hypertext capability was used in this prototype to demonstrate future hypertext capabilities.

b. Combat Potential

This segment shows the total starting combat potential for the Task Force. It consists of one screen with 11 seconds of audio.

c. Task Force Organization

This segment lists how the Task Force is organized. Although the audio is very short, 3 seconds, the screen is displayed until the analyst makes another selection.

d. Commander's Intent

Every task force mission has a commander's intent statement. Although this screen is repeated in the Battlefield Operating Systems segment, it is displayed in the Mission segment because it logically falls there.

3. Battlefield Operating Systems

Task force functions are grouped into seven battlefield operating systems to support the commander's intent: Command and Control; Maneuver; Fire Support; Intelligence; Air Defense Artillery; Mobility, Countermobility, and Survivability; and Combat Service Support. [Ref. 11]

a. Command and Control

In this section, the commander's intent is repeated, with a simulated hyperlink to the take home package. The THP symbol is provided to allow the user to review the one

page of Command and Control Operating Systems / Lessons Learned information.

b. Scheme of Maneuver

The maneuver companies of the task force have the responsibility to destroy enemy forces and seize and hold terrain. This portion of the tape was too lengthy to reproduce by hand. A live motion card that is compatible with IconAuthor will allow real-time playback from a supported VCR. A live motion card with compression capabilities is necessary to capture this sequence of events and store internally on the hard disk.

c. Fire Support

The task force commander plans and coordinates fire support to suppress, neutralize, or destroy the enemy. One screen with audio (5 seconds) is used to display priority of fires. Since fire support is a part of the take home package, the THP symbol is used to provide this information.

d. Intelligence

The task force has the scout platoon and infantry patrols dedicated to gathering information about the enemy. This portion of the tape was also too lengthy to reproduce by hand. However, data from the take home package was linked to the screen to provide S2 and Scout Platoon information. Multiple screens allow the analyst to view plans, preparation, execution, and lessons learned for intelligence.

e. Air Defense Artillery

The air defense artillery has the responsibility for encompassing friendly assets to deter enemy assets. The air defense portion of the tape was consolidated onto one screen. The audio (15 seconds) describes in detail a summary of the air defense available for this mission. The take home package was linked to the screen for additional air defense information.

f. Mobility, Countermobility, and Survivability

The engineer unit is assigned its duties pending the type of mission and level of enemy threat. Three screens are used to portray this segment of the battlefield operating systems with 13 seconds of audio.

g. Combat Service Support

The combat service support is reponsible for supplies and support of the combat mission. This segment of the video was again too lengthy to reproduce by hand. However, a screen was created which allows a link to the take home package for additional information.

4. Critical Events During Mission

As determined by NTC, this segment of the tape covers an eight-hour period of the most critical events that occurred during the task force mission. This lengthy segment of the prototype was not reproduced for the same reasons as previously mentioned.

5. Mission Summary Statistics

A screen displaying the ending combat potential is the wrap-up portion of the video. The take home package provides much more information and the THP symbol is included on the screen. Task force battle losses, company/team battle losses, and weapon systems that caused OPFOR casualties are displayed for the analyst.

B. NTC DIGITAL DATABASE

The *Ingres database* contains 19 tables that support statistics derived from each task force mission. [Ref. 1] This information is needed by the analyst and will be accessed through the "NTC Digital DataBase" button offered on the main menu.

C. TASK FORCE DATA QUALIFICATION

The interface with the Forces Update Expert System [Ref. 1] is accomplished through the "Task Force Data Qualification" button on the main menu. The expert system is stored in the VPEXPERT directory. When the user selects this button, the TFDQMENU.RLE screen is displayed allowing the user to choose Task Organization Comparison, Combat Systems Total Comparison, or Combat Systems Reallocations for either BLUEFOR or REDFOR.

D. ROUTE DETERMINATION

During NTC battle engagements, routes taken by the troops were recorded [Ref. 1]. The Route Determination module analyzes these routes and the outcome of the battle. If the routes were catastrophic for the mission, this module determines better routes to be used as input for JANUS(A). This module has not been completed at the time of this publication; therefore, the interface is not active.

E. CREATE JANUS(A) INPUT FILES

When all modules of SEAS have been completed, this interface will allow an analyst to create the files necessary as input to JANUS(A). This module has not been completed at the time of this publication; therefore, the interface is not active.

F. EXIT TO OPERATING SYSTEM

This interface allows the analyst to perform whatever functions necessary in the operating environment. A return to the main menu occurs after the operating system functions are performed.

VI. MULTIMEDIA COMPONENTS USED FOR THE PROTOTYPE

A. HARDWARE

The following hardware was used to create the prototype.

1. Base System

- 80486DX 33 Mhz
- 8 MB of RAM
- 120-MB hard disk
- An NEC MultiSync 3FGx color monitor
- A 3.5 inch 1.44MB floppy drive
- A 5.25 inch 1.2MB floppy drive
- A three-button mouse
- 4 serial and 2 parallel ports

2. Video Graphic Adapter

An Orchid Fahrenheit 1280° (1MB) VGA card was used with the following characteristics:

- A Graphic User Interface (GUI) accelerator
- Flicker-free 72Hz support
- 32,768 colors with Sierra HC RAMDAC chip
- High resolution graphics (1280x1024x16 colors, Interlaced)
- Backward compatibility with VGA, CGA, HGC and MDA standards
- A *feature connector* for connection to the VMC-1 Live Motion Video Card

NOTE: Due to the limitations of the live motion video card, the Fahrenheit board was used as a standard VGA (640x480).

3. Live Motion Video Card

The VMC-1 Live Motion Video Controller by Videomail, Inc, was chosen for three reasons. First, it was manufactured by a *local* company which provides immediate technical support, both on the phone and in person. Second, it met the minimum requirements of the thesis, while providing excellent quality. Third, the company was highly recommended. The board was purchased before IconAuthor was selected as the authoring package. It was not compatible with the software.

4. CD-ROM

An NEC CD-ROM unit (internal model CDR-83) with an SCSI signal connector and cable was used. It has a maximum data transmission speed of 1.5Mbytes per second, with an average speed of 150Kbytes per second. The seek time is advertised at 280ms, with an average time of 300ms.

5. Audio Device

A Pro Audio Spectrum 16 audio card was used with the following characteristics:

- Digital audio
- MIDI sequencing
- Automated mixing
- Music
- Speech

- Sound effects

The internal CD-ROM drive is connected to this board via a 50-pin SCSI connector.

B. SOFTWARE

A plethora of software was considered and tried. The best results were with the following:

- Microsoft DOS Version 5.0
- Microsoft Windows Version 3.1
- Microsoft Windows PC Paintbrush
- IconAuthor

VII. STEPS TO BUILDING ANOTHER TASK FORCE ACTION TAPE MODULE

The Task Force Action Summary prototype uses only one battle scenario. The purpose of this section is to provide coordination necessary to create another scenario.

A. PROPER EQUIPMENT

IconAuthor supports video tape players, overlay cards, and audio boards that make authoring a pleasure and presentations look professional. An NEC PC VCR, a New Media Graphics Super Video Windows board with a motion compression board, and Media Vision's ProAudio Spectrum 16 board would make an excellent setup for IconAuthor, with at least 4 mg of memory. The audio board and 8 mg of memory were available for this prototype, but the VCR and overlay board were not.

B. SCREEN FILE FORMATS

The screens were orginally designed as .BMP files, but were compressed to .RLE files. All of the screens that have specific task force information on them are not generic enough to use for a different summary tape and therefore, will have to be redrawn. Additionally, no mission related information, i.e., CAV 1-5 and 22 FEB 1992, can be shown on any screens for the production product [Ref. 12]. All five major menus are useable, as are the 14 screens designed to show the ASCII text of the take home package. If a video compression board is

purchased, the remaining 25 screens can be modified slightly to change the existing green background to black to allow for video. The button selections on each screen can be preserved.

C. AUDIO FILES

All audio files will have to be replaced to reflect the summary tape being used.

D. TAKE HOME PACKAGE

Without hypertext capabilities, each file used from the take home package was manipulated to fit the frame screen designed for it. This was time consuming. If IconAuthor's hypertext features can be incorporated into a universal template, then minor changes to the screens can be made each time a single exercise is automated.

E. ICONAUTHOR'S .IW FILES

There are 63 modules and one driver that comprise the Task Force Action Summary subsection. (".IW" is IconAuthor's extension for a program). The structure is in place and should require very little modification. The "contents" of the icons representing the structure of the files will change with each new single exercise, but not necessarily the structure.

VIII. LESSONS LEARNED

A. PROGRAM CREATION

The Task Force Action Summary module was created to allow the user to branch from screen to screen without having to return to a main menu from branching. IconAuthor allows loops and unlimited branching capabilities, but does not give direct instructions on how to do this. When using the "SUBAPP" icon, in the Content Editor, define "Action" to be *restart*. This allows for unlimited branching capabilities.

B. AUDIO FILES

The more audio files you put in your presentation, the slower the presentation. If you mix in animation, watch out for asking too much of the computer. The animation will appear jerky and the audio may break up. Keep the scenes simple (avoid a lot of colors) to allow the animation to appear smooth.

C. PLANNING

During creation of this prototype, *planning* was the most important step. As with the current methods of designing systems, the analyst must have the big picture before design and coding can begin; however, with multimedia, the author must have all props before actually beginning the authoring

process. Every .PCX or .BMP screen must be created and every audio segment previously recorded. Careful consideration must be placed on the design of screens to allow generation of pleasing and functional screens. All sound must be original recordings by the author, or copyright permission for music must be obtained. Additionally, if the scenes are going to be narrated, the best quality is attained by having a professional do it. The end product will be well worth the cost.

APPENDIX A. TASK FORCE ACTION SUMMARY

1 **SITUATION**
- a. Enemy
- b. Friendly

2 **MISSION**
- a. Mission Statement
- b. Starting Combat Potential
- c. Task Force Organization
- d. Commander's Intent

3 **BATTLEFIELD OPERATING SYSTEMS**
- a. Command and Control
- b. Scheme of Maneuver
  - 1) TF Line of Departure (Task Force Plan)
  - 2) Objective TIM
  - 3) Objective BOB and TED
  - 4) Consolidation on Objective HOUSE
- c. Fire Support
  - 1) Priority of Fires
- d. Intel Plan
- e. ADA (Air Defense Artillery)
  - 1) ADA Starting Potential
  - 2) Air Defense Warning
  - 3) ADA Assets
- f. MCM (Mobility Countermobility)
  - 1) Priority Engineer Effort
  - 2) Priority of Support
  - 3) Engineer Task Organization
  - 4) MOPP Level
- g. CSS (Combat Service Support)

4 **CRITICAL EVENTS DURING MISSION**
- a. TEAM ALPHA ROUTES
- b. 2300 TF LD
- c. 0004 TM D IN DIRECT FIRE CONTACT
- d. 0020 TM D HEAVILY ATTRITED
- e. 0048 TM A BREACHES
- f. 0115 TM A FAR SIDE
- g. 0148 TF 1-32 IN BREACH
- h. 0240 CATK LAUNCHED (counter attack)
- i. 0330 CA RESERVE IN HASTY DEFENSE
- j. 0630 DIRECT FIRE CONTACT
- k. 0700 EOM (End of Mission)

5 **MISSION SUMMARY STATISTICS**
Ending Combat Potential

APPENDIX B. SUMMARY TABLE

The following table gives a summary of each program. It lists the screen(s) the program displays, the length and name of the audio file, if any, the name of the program called if the screen has the THP symbol displayed, and the take home package ASCII file that is displayed for each THP symbol.

Program	Screen	WAV File	THP	THP File
ADABOS.IW	ADABOS.RLE	ADABOS.WAV	ADAFACTS.IW	
ADAFACTS.IW	ADAFACTS.RLE			ADAFACTS.TXT
CCBOS.IW	CCBOS.RLE	INTENT.WAV	CCFACTS.IW	
CCFACTS.IW	CCFACTS.RLE			CCFACTS.TXT
CSSBOS.IW	CSSBOS.RLE			CSSFACTS.IW
CSSFACTS.IW	CSSFACTS.RLE			CSSFACTS.TXT
EIPS2.IW	IPS2.RLE			EIPS2.TXT
EIPSP.IW	IPSP.RLE			IEPSP.TXT
EMISSB.IW	EXEC.RLE			EMISSB.TXT
EMISSC.IW	EXEC.RLE			EMISSC.TXT
EMISSD.IW	EXEC.RLE			EMISSD.TXT
EMISSE.IW	EXEC.RLE			EMISSE.TXT
EVENTS.IW	EVENTS.RLE			
EXEC.IW	EXEC.RLE			
FSBOS.IW	FSBOS.RLE	FSBOS.WAV	FSFACTS.IW	
FSFACTS.IW	FSFACTS.RLE			FSFACTS.TXT
HELP.IW	HELP.RLE			
INACTIVE.IW	MMENU1.RLE			
INTENT.IW	INTENT1.RLE	INTENT.WAV		
IPBOS.IW	IPBOS.RLE	IPBOS.WAV	IPMENU.IW	
IPMENU.IW	IPMENU.RLE			
IPS2.IW	IPS2.RLE			IPS2.TXT
IPSP.IW	IPSP.RLE			IPSP.TXT
LESSONS.IW	LESSONS.RLE			LLMISSA.TXT
LLIPS2.IW	IPS2.RLE			LLIPS2.TXT
LLIPSP.IW	IPSP.RLE			LLIPSP.TXT
LLMISSB.IW	LLMISSB.RLE			LLMISSB.TXT
LLMISSC.IW	LLMISSC.RLE			LLMISSC.TXT
LLMISSD.IW	LLMISSD.RLE			LLMISSD.TXT
LLMISSE.IW	LLMISSE.RLE			LLMISSE.TXT
LOSSCT.IW	LOSSCT.RLE			LOSSCT.TXT
LOSSOPFO.IW	LOSSOPFO.RLE			LOSSOPFO.TXT
LOSSTF.IW	LOSSTF.RLE			LOSSTF.TXT
MAINMENU.IW	MMENU.RLE			
MCMBOS.IW	MCMBOS.RLE	MCMBOS.WAV		
	MCMBOS1.RLE			
	MCMBOS2.RLE			
MISSION.IW	MISSION.RLE	MISSION.WAV	MISSTEXT.IW	

Program	Screen	WAV File	THP	THP File
MISSTEXT.IW	MISSTEXT.RLE			
MISSTMTS.IW	TMISSA.RLE			
OPENMENU.IW	MMENU.RLE			
PMISSA.IW	PMISSA.RLE			PMISSA.TXT
PMISSB.IW	PMISSB.RLE			PMISSB.TXT
PMISSC.IW	PMISSC.RLE			PMISSC.TXT
PMISSD.IW	PMISSD.RLE			PMISSD.TXT
PMISSE.IW	PMISSE.RLE			PMISSE.TXT
POTENTAL.IW	POTENTAL.RLE	POTENTAL.WAV		
PREP.IW	PREP.RLE			PRMISSA.TXT
PRIPS2.IW	IPS2.RLE			PRIPS2.TXT
PRIPSP.IW	IPSP.RLE			PRIPSP.TXT
PRMISSB.IW	PRMISSB.RLE			PRMISSB.TXT
PRMISSC.IW	PRMISSC.RLE			PRMISSC.TXT
PRMISSD.IW	PRMISSD.RLE			PRMISSD.TXT
PRMISSE.IW	PRMISSE.RLE			PRMISSE.TXT
SITUATIN.IW	ESITUTN.RLE	SITUATIN.WAV		
	SITUATN1.RLE			
	SITUATN2.RLE			
	SITUATN3.RLE			
	SITUATN4.RLE			
	SITUATN5.RLE			
	SITUATN6.RLE			
	SITUATN7.RLE			
SMBOS.IW	SMBOS.RLE			
STATMENU.IW	STATMENU.RLE			
STATS.IW	STATS.RLE	STATS.WAV	STATMENU.IW	
TFDQMENU.IW	TFDQMENU.RLE			
TFMENU.IW	TFMENU.RLE			
TFORG.IW	TFORG.RLE	TFORG.WAV		
THESIS.IW	OPENMENU.IW			
TMISSB.IW	TMISSB.RLE			TMISSB.TXT
TMISSC.IW	TMISSC.RLE			TMISSC.TXT
TMISSD.IW	TMISSD.RLE			TMISSD.TXT
TMISSE.IW	TMISSE.RLE			TMISSE.TXT

APPENDIX C. PROGRAM FILES

All of these programs are located in the Task Force Action Summary module.

ADABOS.IW: This program is accessed via the "Battlefield Operating Systems" button and the submenu button "ADA". It plays an audio segment and displays the Air Defense Artillary screen with an access to the take home package.

ADAFACTS.IW: This program is called from ADABOS.IW. It displays in ASCII preselected portions of the take home package.

CCBOS.IW: This program is accessed via the "Battlefield Operating Systems" button and the submenu button "Command & Control". It displays the Commander's Intent screen with an access to the take home package.

CCFACTS.IW: This program is called from CCBOS.IW. It displays in ASCII preselected portions of the take home package.

CSSBOS.IW: This program is accessed via the "Battlefield Operating Systems" button and the submenu button "CSS". It displays the Combat Support Service screen with an access to the take home package.

CSSFACTS.IW: This program is called from CSSBOS.IW. It displays in ASCII preselectted portions of the take home package.

EIPS2.IW: This program is called from IPS2.IW. It displays the execution phase of the S2 from the take home package in ASCII text.

EIPSP.IW: This program is called from IPSP.IW. It displays the execution phase of the Scout Platoon from the take home package in ASCII text.

EMISSB.IW: This program is called from EXEC.IW. It displays the execution phase of the Mission Statement for Team B from the take home package in ASCII text.

EMISSC.IW: This program is called from EXEC.IW. It displays the execution phase of the Mission Statement for Team C from the take home package in ASCII text.

EMISSD.IW: This program is called from EXEC.IW. It displays the execution phase of the Mission Statement for Team D from the take home package in ASCII text.

EMISSE.IW: This program is called from EXEC.IW. It displays the execution phase of the Mission Statement for Company E from the take home package in ASCII text.

EVENTS.IW: This program is accessed via the "Critical Events During Mission" button. A screen is displayed, but is currently inactive due to lack of compatible overlay board which prevented display of video from the Task Force Action Summary tape.

EXEC.IW: This program is called from MISSTEXT.IW. It displays a menu to allow the user to review the execution phase of the take home package for each team/company.

FSBOS.IW: This program is accessed via the "Battlefield Operating Systems" button and the submenu button "Fire Support". It plays an audio segment and displays the Fire Support screen with an access to the take home package.

FSFACTS.IW: This program is called from FSBOS.IW. It displays in ASCII preselected portions of the take home package on one screen.

HELP.IW: This program is accessed via the "About this Document" button on the SEAS main menu. It displays one screen on how to maneuver in the system.

INACTIVE.IW: This program is called from MAINMENU.IW for the "Route Determination" button. The main menu is redisplayed with the message "This button is inactive" displayed.

INTENT.IW: This program is accessed via the "Mission" button and the submenu button "Commander's Intent". It displays the commander's intent screen.

IPBOS.IW: This program is accessed via the "Battlefield Operating Systems" button and the submenu button "Intel Plan". It plays an audio segment and calls IPMENU.IW to display a menu to retrieve S2 and Scout Platoon information from the take home package.

IPMENU.IW: This program is called from IPBOS.IW. It displays a menu to allow the user to review the S2 or Scout Platoon information from the take home package.

IPS2.IW: This program is called from IPMENU.IW. It displays S2 information from the take home package on planning, preparation, execution, and lessons learned.

IPSP.IW: This program is called from IPMENU.IW. It displays Scout Platoon information from the take home package on planning, preparation, execution, and lessons learned.

LESSONS.IW: This program is called from MISSTEXT.IW. It displays a menu to allow the user to review the lessons learned phase of the take home package for each team/company.

LLIPS2.IW: This program is called from IPS2.IW. It displays the lessons learned for the S2 from the take home package in ASCII text.

LLIPSP.IW: This program is called from IPSP.IW. It displays the lessons learned for the Scout Platoon from the take home package in ASCII text.

LLMISSB.IW: This program is called from LESSONS.IW. It displays lessons learned for Team B from the take home package.

LLMISSC.IW: This program is called from LESSONS.IW. It displays lessons learned for Team C from the take home package.

LLMISSD.IW: This program is called from LESSONS.IW. It displays lessons learned for Team D from the take home package.

LLMISSE.IW: This program is called from LESSONS.IW. It displays lessons learned for Company E from the take home package.

LOSSCT.IW: This program is called from STATMENU.IW. It displays Company/Team Battle Losses from the take home package in ASCII.

LOSSOPFO.IW: This program is called from STATMENU.IW. It displays weapon systems that caused OPFOR casualties from the take home package in ASCII.

LOSSTF.IW: This program is called from STATMENU.IW. It displays Task Force Battle Losses from the take home package in ASCII.

MAINMENU.IW: This program is called by any screen having an exit symbol to click on. The animated tank is not part of this screen.

MCMBOS.IW: This program is accessed via the "Battlefield Operating Systems" button and the submenu button "MCM". It plays an audio segment and displays three screens. The audio cannot be terminated by clicking the mouse, because the screens are embedded within the audio. The three screens are Priority Engineer Effort, Priority of Support, and Engineer Task Organization.

MISSION.IW: This program is accessed via the "Mission" button. It displays the Mission Statement of the Task Force with audio. The screen has an access to the take home package.

MISSTEXT.IW: This program is called from MISSION.IW. It displays a menu to allow the user to review Mission Statements, Plans, Preparations, Executions, and Lessons Learned for each of the team/companies from the take home package.

MISSTMTS.IW: This program is called from MISSTEXT.IW. It displays a menu to allow the user to review the mission statements of the take home package for each team/company.

OPENMENU.IW: This program is called from THESIS.IW. It displays the SEAS main menu with an animated tank crossing the screen from right to left.

PMISSA.IW: This program is called from MISSTEXT.IW. It displays a menu to allow the user to review the planning phase of the take home package for Team A.

PMISSB.IW: This program is called from PMISSA.IW. It displays a screen to allow the user to review the planning phase of the take home package for Team B.

PMISSC.IW: This program is called from PMISSA.IW. It displays a screen to allow the user to review the planning phase of the take home package for Team C.

PMISSD.IW: This program is called from PMISSA.IW. It displays a screen to allow the user to review the planning phase of the take home package for Team D.

PMISSE.IW: This program is called from PMISSA.IW. It displays a screen to allow the user to review the planning phase of the take home package for Company E.

POTENTAL.IW: This program is accessed via the "Mission" button and the submenu button "Combat Potential". It displays the Starting Combat Potential of the Task Force with audio.

PREP.IW: This program is called from MISSTEXT.IW. It displays a menu to allow the user to review the preparation phase of the take home package for each team/company.

PRIPS2.IW: This program is called from IPS2.IW. It displays the preparation phase for the S2 from the take home package in ASCII text.

PRIPSP.IW: This program is called from IPSP.IW. It displays the preparation for the Scout Platoon from the take home package in ASCII text.

PRMISSB.IW: This program is called from PREP.IW. It displays a screen to allow the user to review the preparation phase of the take home package for Team B.

PRMISSC.IW: This program is called from PREP.IW. It displays a screen to allow the user to review the preparation phase of the take home package for Team C.

PRMISSD.IW: This program is called from PREP.IW. It displays a screen to allow the user to review the preparation phase of the take home package for Team D.

PRMISSE.IW: This program is called from PREP.IW. It displays a screen to allow the user to review the preparation phase of the take home package for Company E.

SITUATIN.IW: This program is accessed via the "Situation" button. It displays eight screens while playing audio. Since the screens are embedded in the audio, a click of the mouse will not terminate the audio.

SMBOS.IW: This program is accessed via the "Battlefield Operating Systems" button and the submenu button "Scheme of Maneuver". A screen is displayed, but is currently inactive due to lack of compatible overlay board which prevented display of video from the Task Force Action Summary tape. information.

STATMENU.IW: This program is called from STATS.IW. It displays a menu that lets the user select Task Force Battle Losses, Company/Team Battle Losses, and Weapon Systems that caused OPFOR Casualties.

STATS.IW: This program is accessed via the "Mission Summary Statistics" button. It displays a screen with audio which allows access to the take home package.

TFMENU.IW: This program is called by OPENMENU.IW and MAINMENU.IW via the "Task Force Action Summary" button. It

allows access to the five major sections of the Task Force Action Summary tape; Situation, Mission, Battlefield Operating Systems, Critical Events during Mission, and Mission Summary Statistics.

TFORG.IW: This program is accessed via the "Mission" button and the submenu button "TF Organization". It displays the Task Force Organization with audio.

THESIS.IW: This is the driver program that starts the prototype. This program must be run first to view the prototype from the start.

TMISSB.IW: This program is called from MISSTMTS.IW. It displays mission statement information for Team B from the take home package.

TMISSC.IW: This program is called from MISSTMTS.IW. It displays mission statement information for Team C from the take home package.

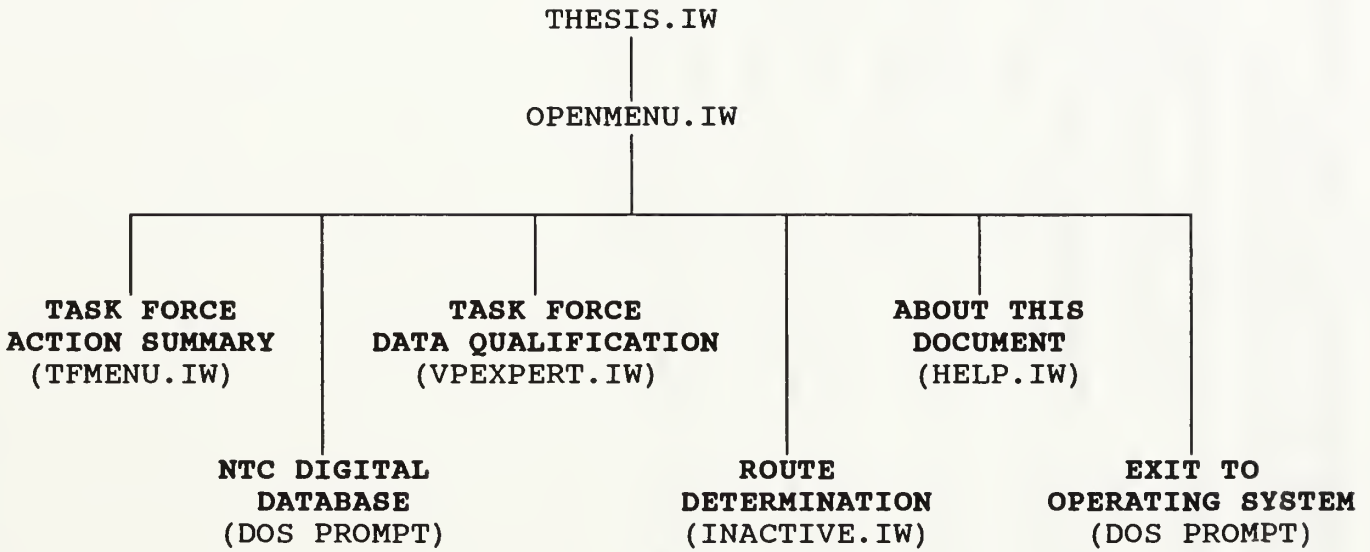
TMISSD.IW: This program is called from MISSTMTS.IW. It displays mission statement information for Team D from the take home package.

TMISSE.IW: This program is called from MISSTMTS.IW. It displays mission statement information for Team E from the take home package.

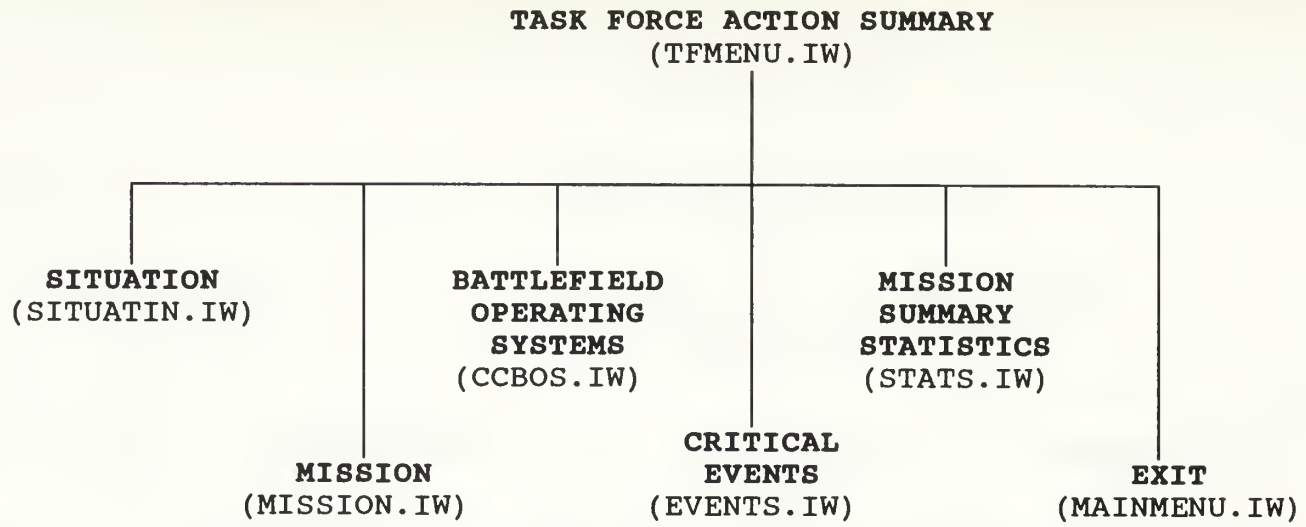
APPENDIX D. SYSTEM FLOW CHARTS

To avoid designing a system flowchart for each of the 66 programs, those having the same structure were combined onto one diagram. Words in **bold** are menu buttons on the screens. The statement "MISSION.IW → MISSTEXT.IW" means that the screen called by MISSION.IW has a THP symbol which calls the program MISSTEXT.IW.

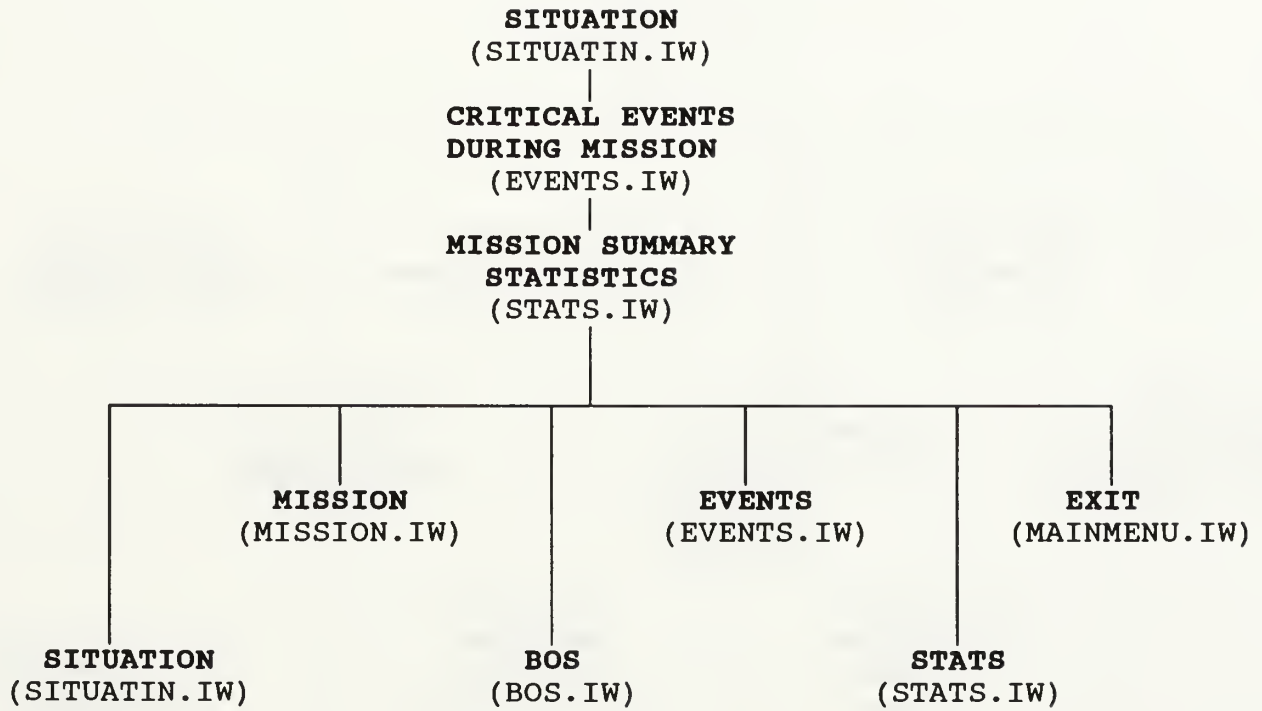
MAIN DRIVER PROGRAM



TASK FORCE ACTION SUMMARY

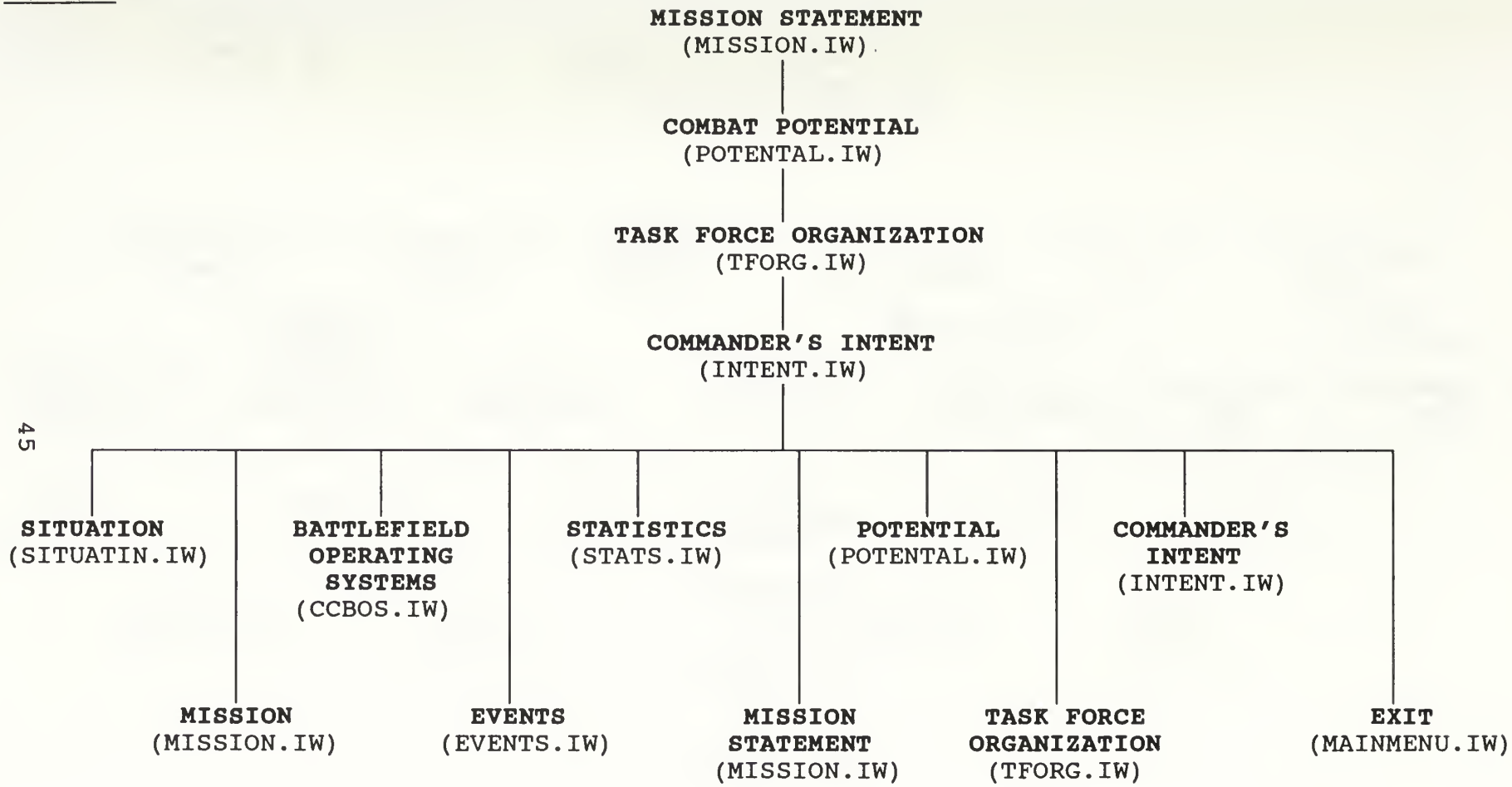


SITUATION
CRITICAL EVENTS DURING MISSION
MISSION SUMMARY STATISTICS



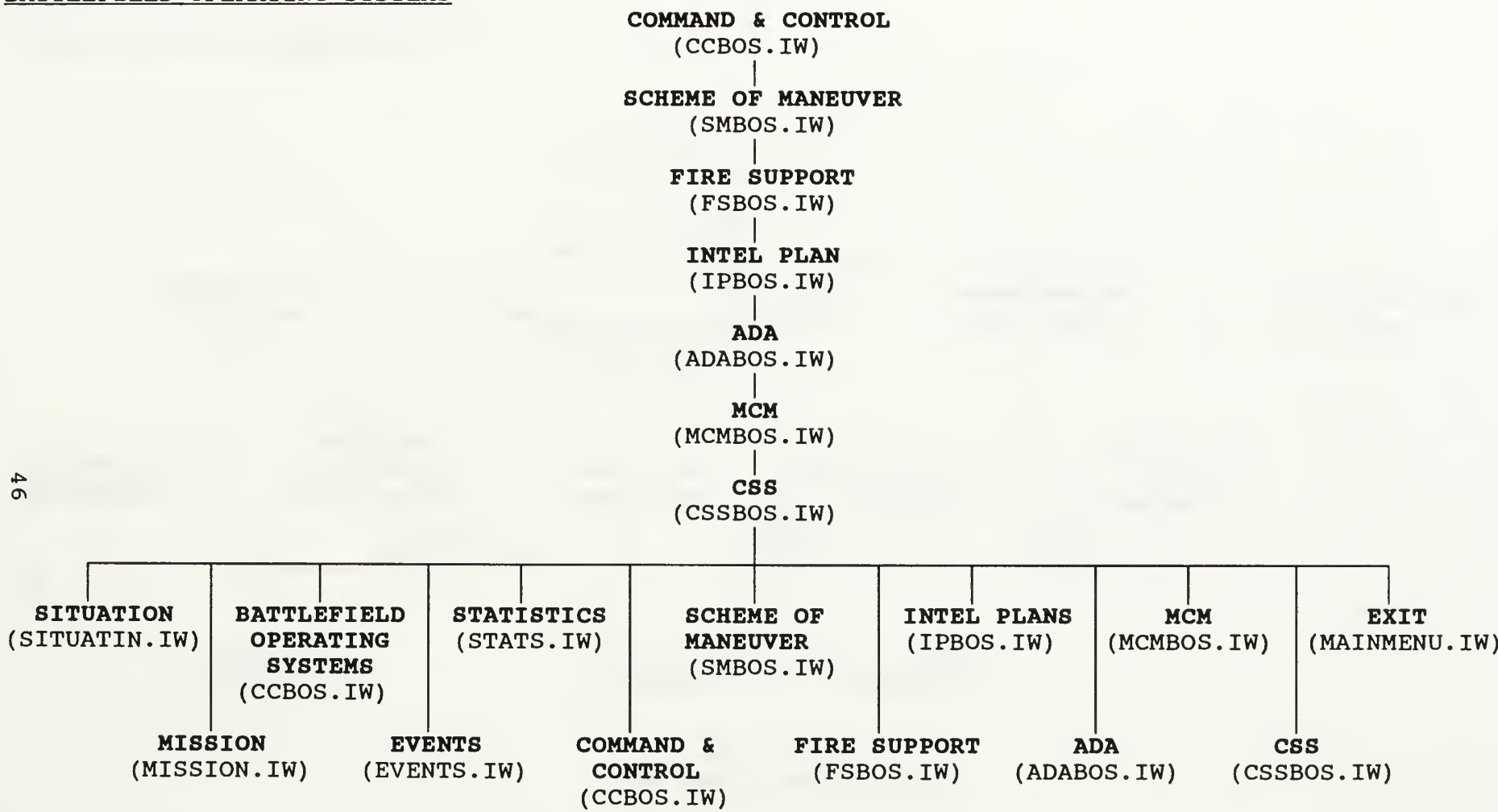
(STATS.IW → STATMENU.IW)

MISSION



(MISSION.IW → MISSTEXT.IW)

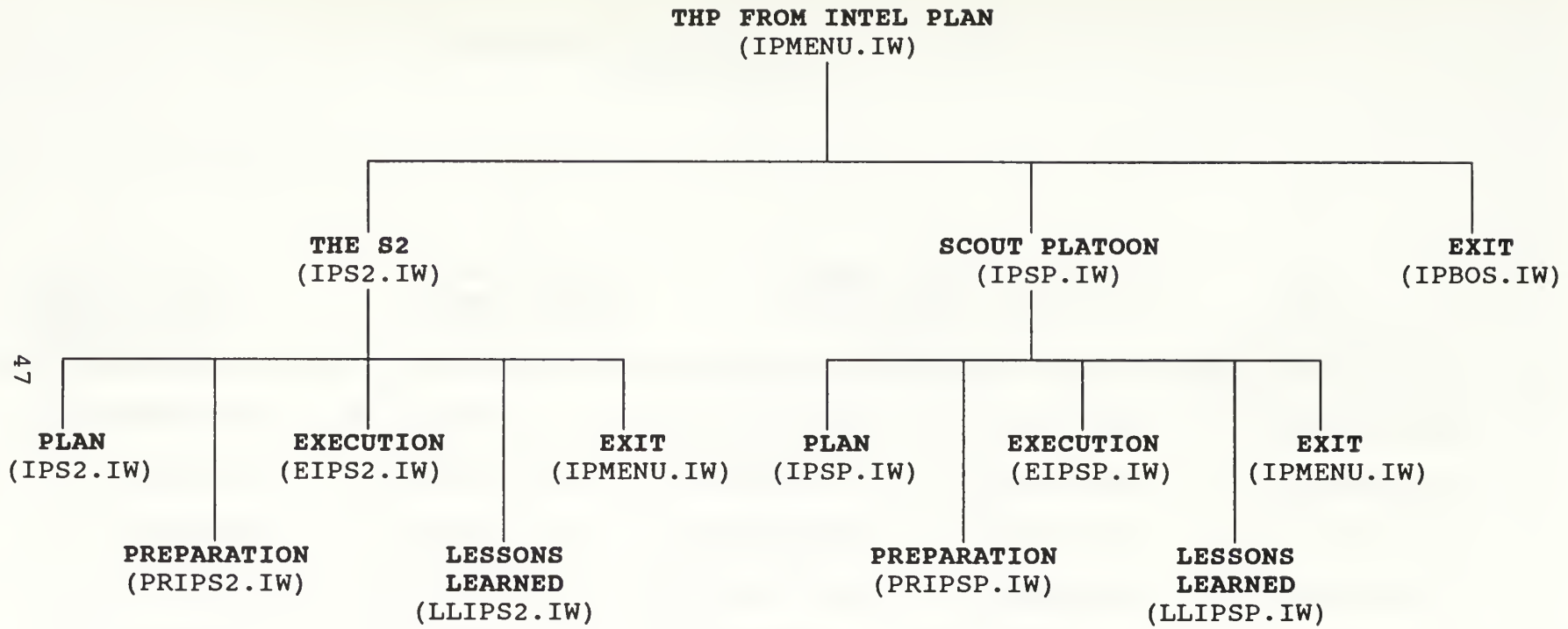
BATTLEFIELD OPERATING SYSTEMS



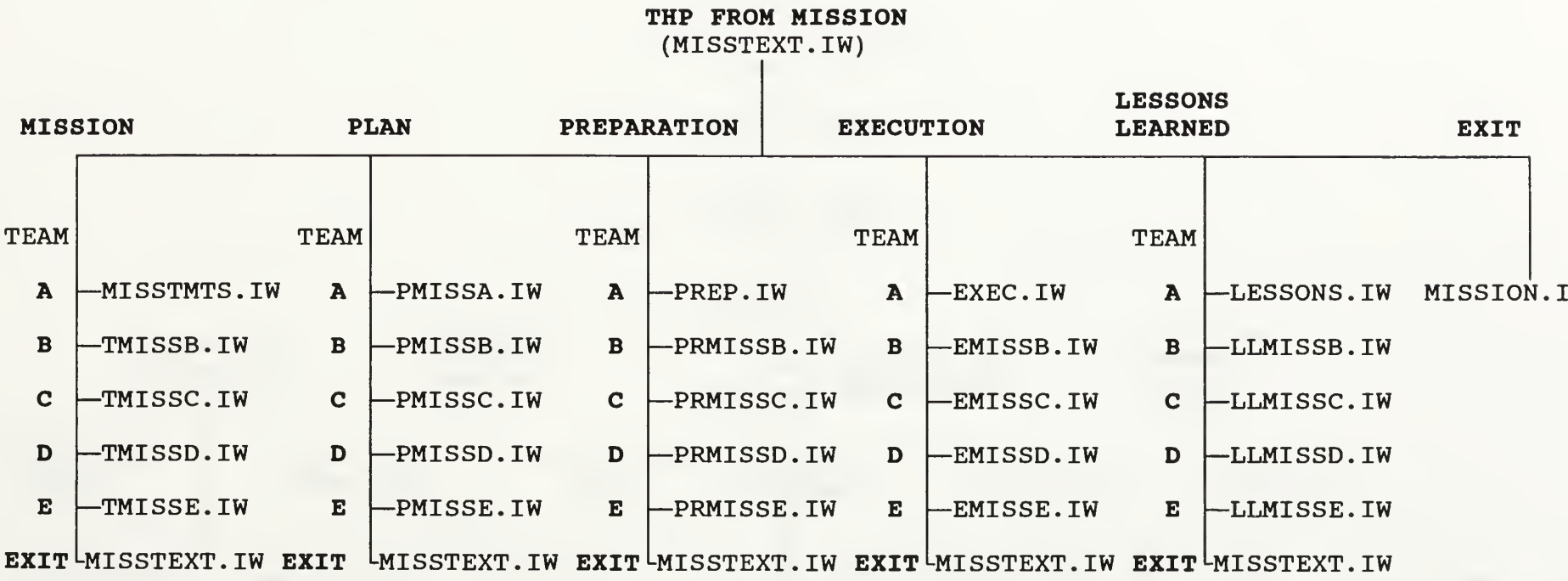
CCBOS.IW → CCFACTS.IW
FSBOS.IW → FSFACTS.IW
IPBOS.IW → IPFACTS.IW

ADABOS.IW → ADAFACTS.IW
CSSBOS.IW → CSSFACTS.IW

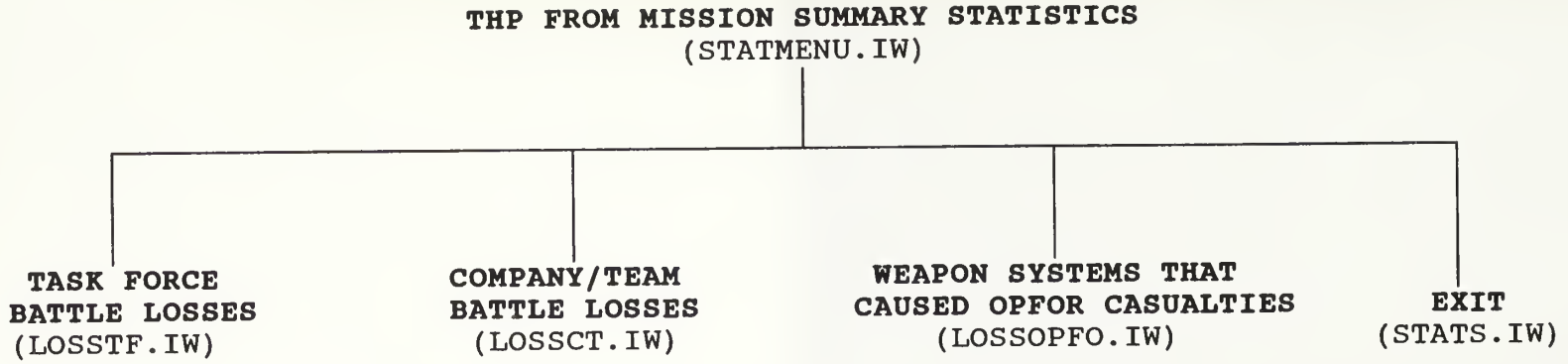
INTEL PLAN


THP FROM INTEL PLAN
(IPMENU.IW)
THE S2
(IPS2.IW)
SCOUT PLATOON
(IPSP.IW)
EXIT
(IPBOS.IW)
PLAN
(IPS2.IW)
PREPARATION
(PRIPS2.IW)
EXECUTION
(EIPS2.IW)
LESSONS LEARNED
(LLIPS2.IW)
EXIT
(IPMENU.IW)
PLAN
(IPSP.IW)
PREPARATION
(PRIPSP.IW)
EXECUTION
(EIPSP.IW)
LESSONS LEARNED
(LLIPSP.IW)
EXIT
(IPMENU.IW)

MISSION

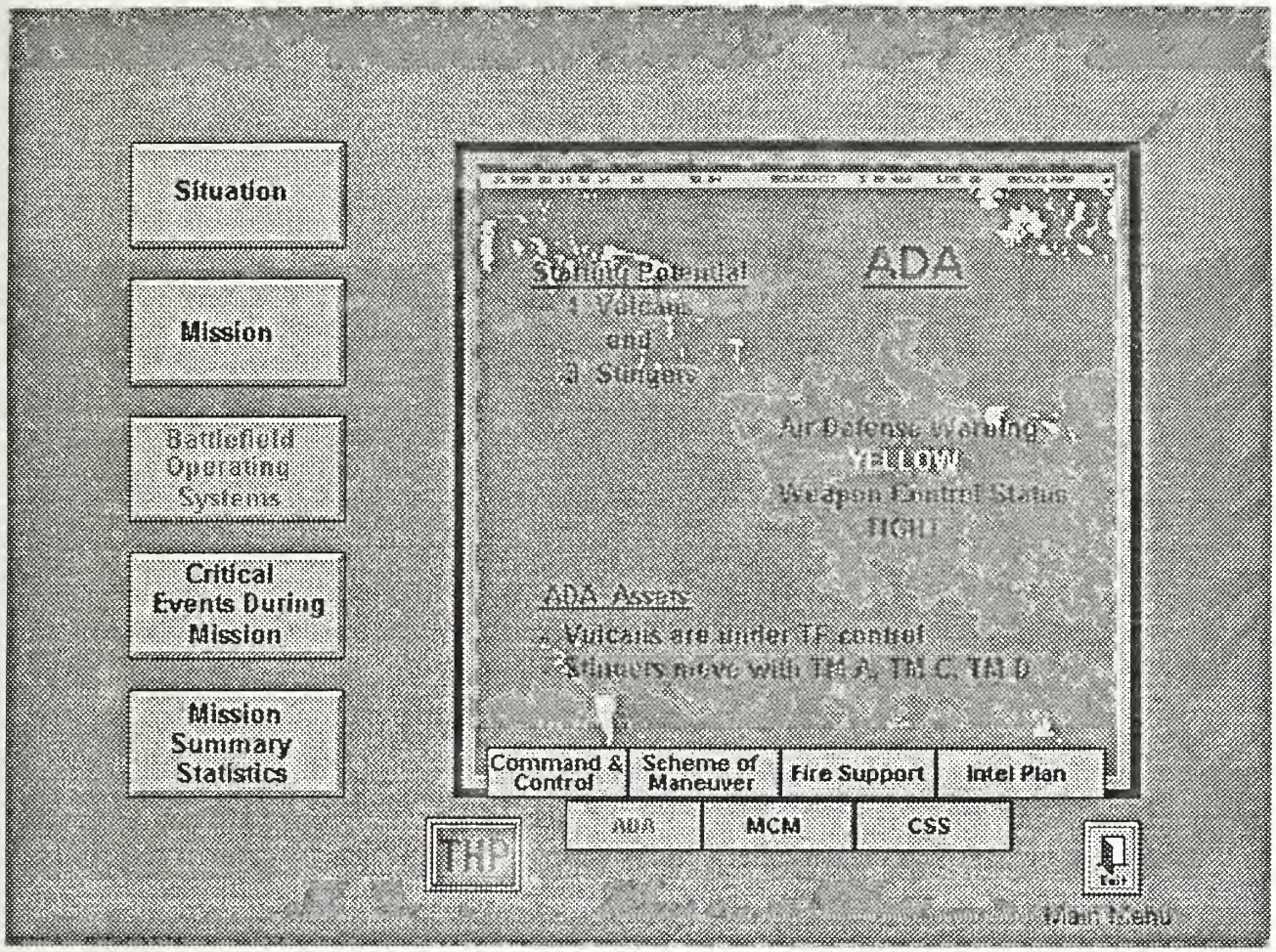

THP FROM MISSION
(MISSTEXT.IW)
MISSION
PLAN
PREPARATION
EXECUTION
LESSONS LEARNED
EXIT
TEAM
A
B
C
D
E
EXIT
MISSTMTS.IW
TMISSB.IW
TMISSC.IW
TMISSD.IW
TMISSE.IW
MISSTEXT.IW
PMISSA.IW
PMISSB.IW
PMISSC.IW
PMISSD.IW
PMISSE.IW
PREP.IW
PRMISSB.IW
PRMISSC.IW
PRMISSD.IW
PRMISSE.IW
EXEC.IW
EMISSB.IW
EMISSC.IW
EMISSD.IW
EMISSE.IW
LESSONS.IW
LLMISSB.IW
LLMISSC.IW
LLMISSD.IW
LLMISSE.IW
MISSION.I

MISSION SUMMARY STATISTICS

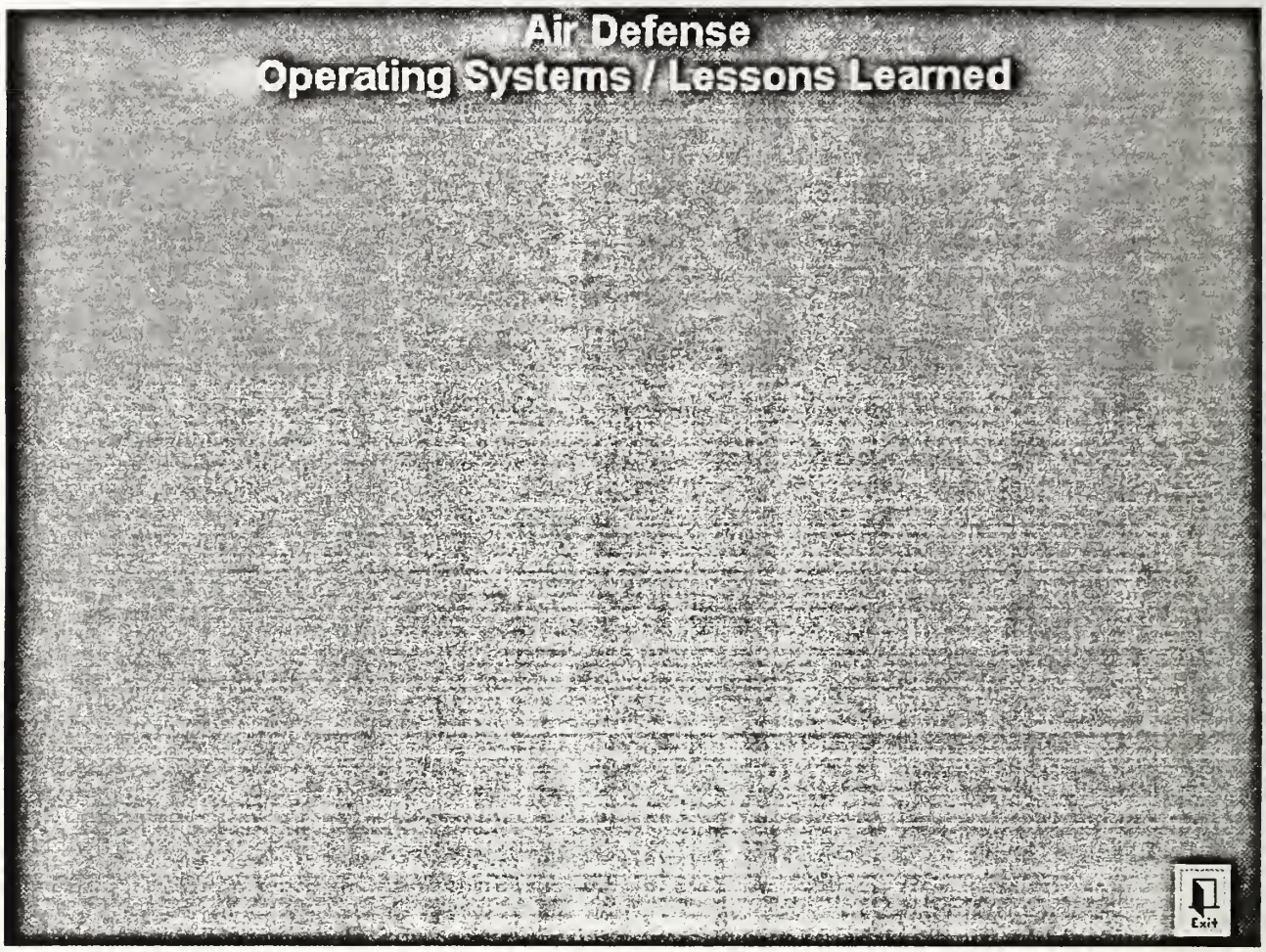


APPENDIX E. GRAPHIC FILE LIST

ADABOS.RLE
ADAFACTS.RLE
CCBOS.RLE
CCFACTS.RLE
CSSBOS.RLE
CSSFACTS.RLE
ESITUATN.RLE
EVENTS.RLE
EXEC.RLE
FSBOS.RLE
FSFACTS.RLE
HELP.RLE
INTENT1.RLE
IPBOS.RLE
IPMENU.RLE
IPSP.RLE
IPS2.RLE
LESSONS.RLE
LOSSCT.RLE
LOSSOPFO.RLE
LOSSTF.RLE
MCMBOS.RLE
MCMBOS1.RLE
MCMBOS2.RLE
MISSION.RLE
MISSTEXT.RLE
MMENU.RLE
MMENU1.RLE
PLAN.RLE
POTENTAL.RLE
PREP.RLE
SITUTIN1.RLE
SITUTIN2.RLE
SITUTIN3.RLE
SITUTIN4.RLE
SITUTIN5.RLE
SITUTIN6.RLE
SITUTIN7.RLE
SMBOS.RLE
STATMENU.RLE
STATS.RLE
TASKFOR.RLE
TFDQMENU.RLE
TFMENU.RLE
TMISSA.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
ADA
Air Defense Warning
YELLOW
Weapon Control Status
HIGH
ADA Assets
Vulcans are under TF control
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
AVIA
MCM
CSS
THP
Main Menu

ADABOS.RLE



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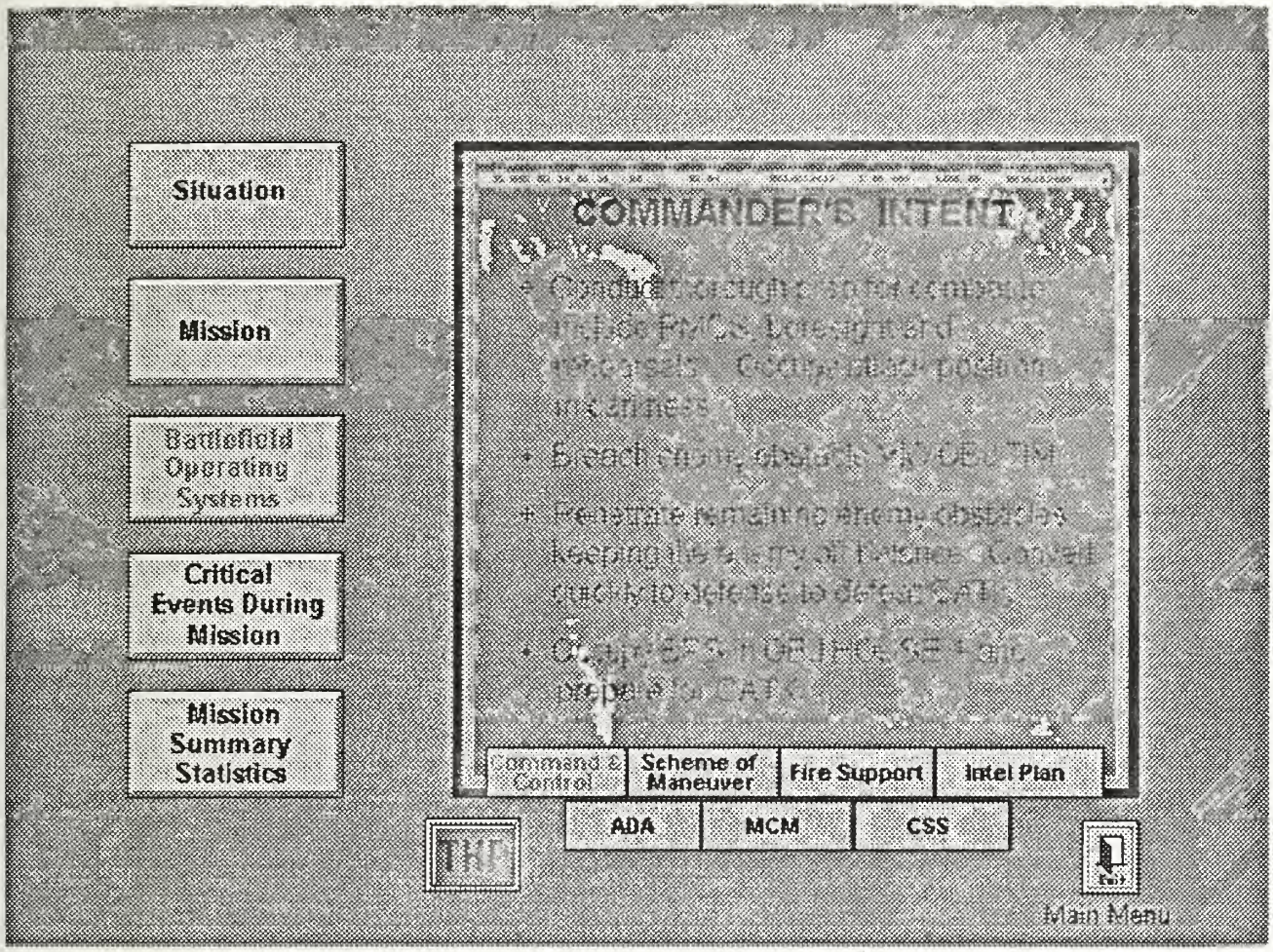
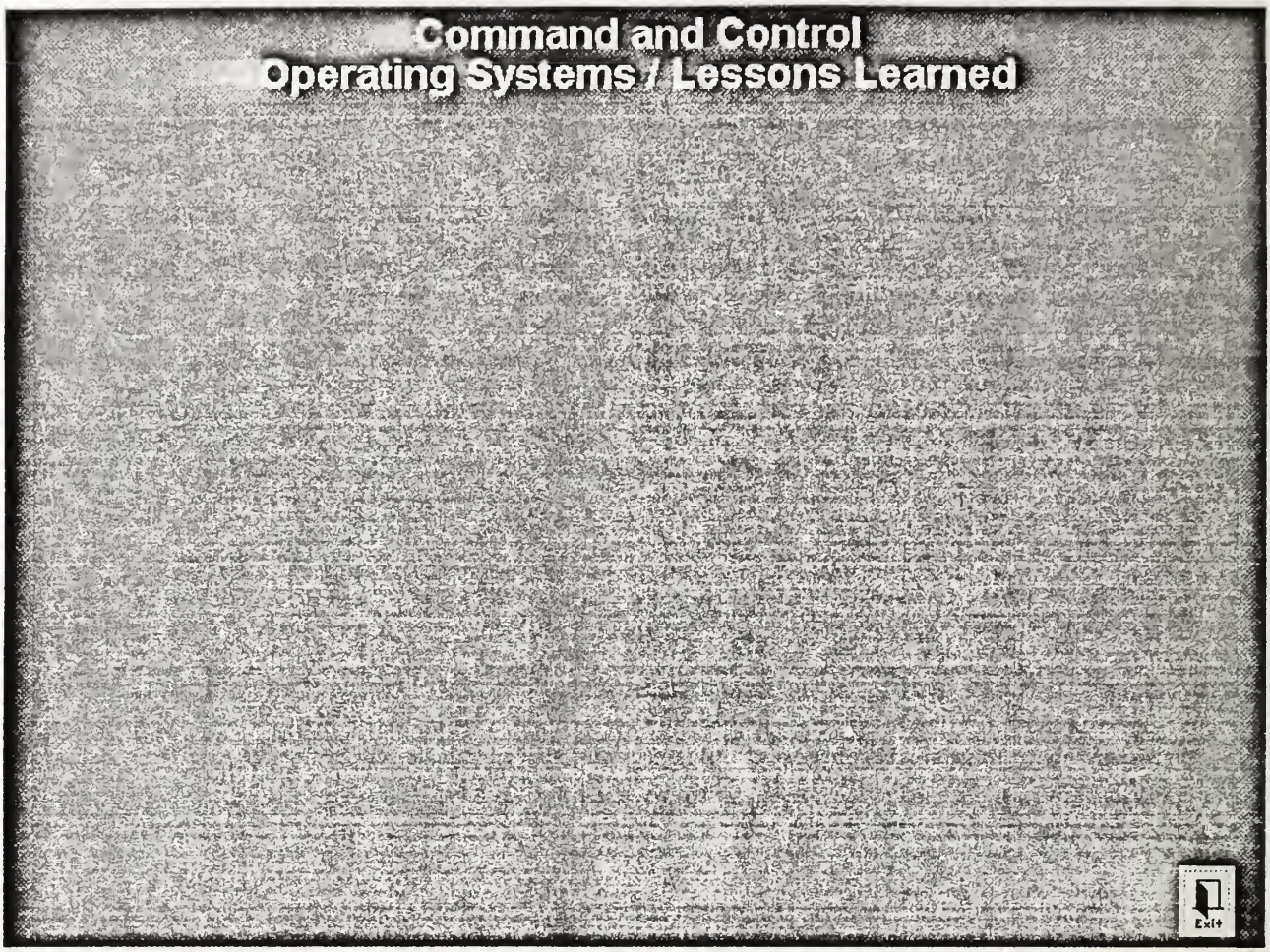
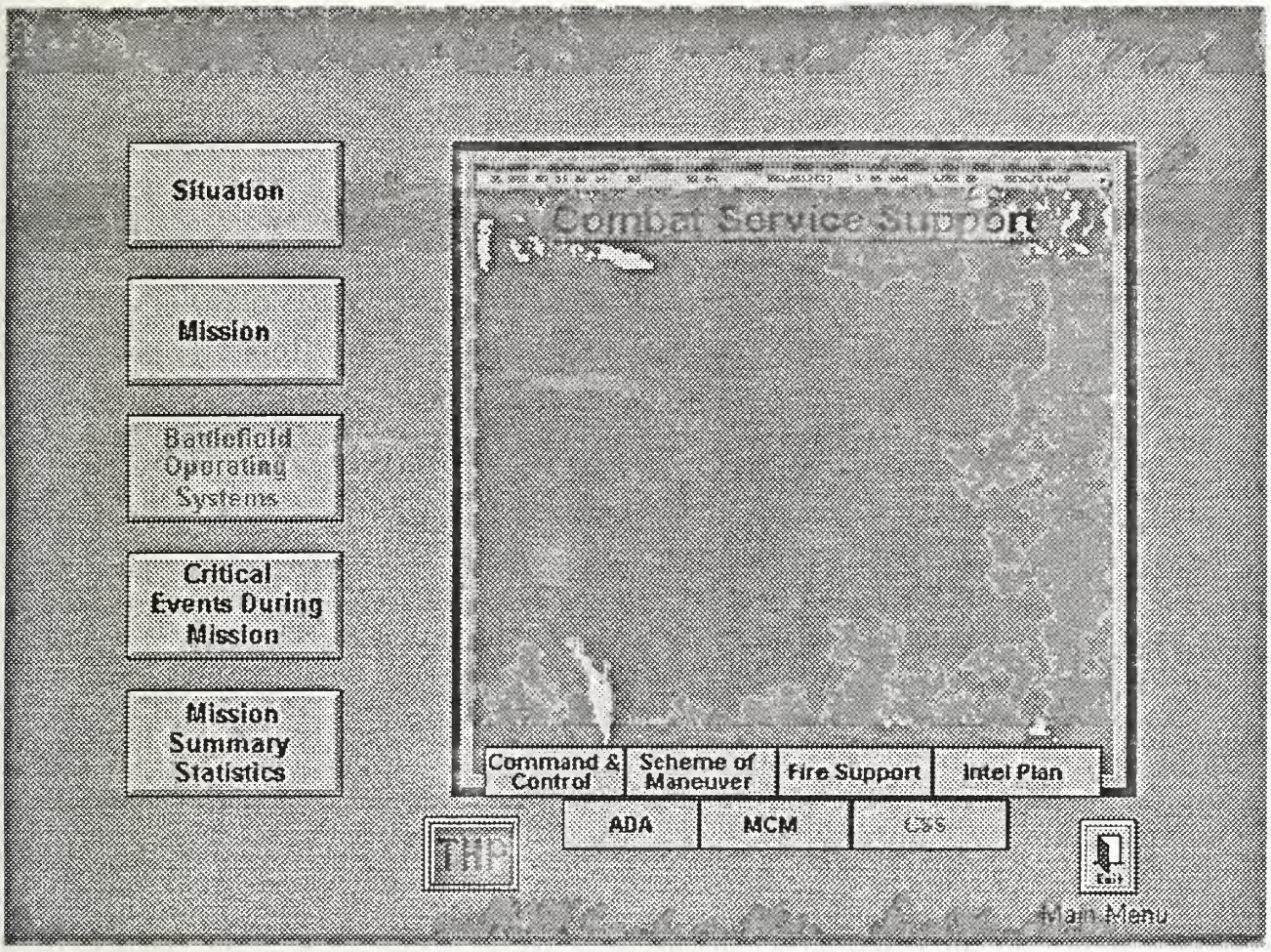
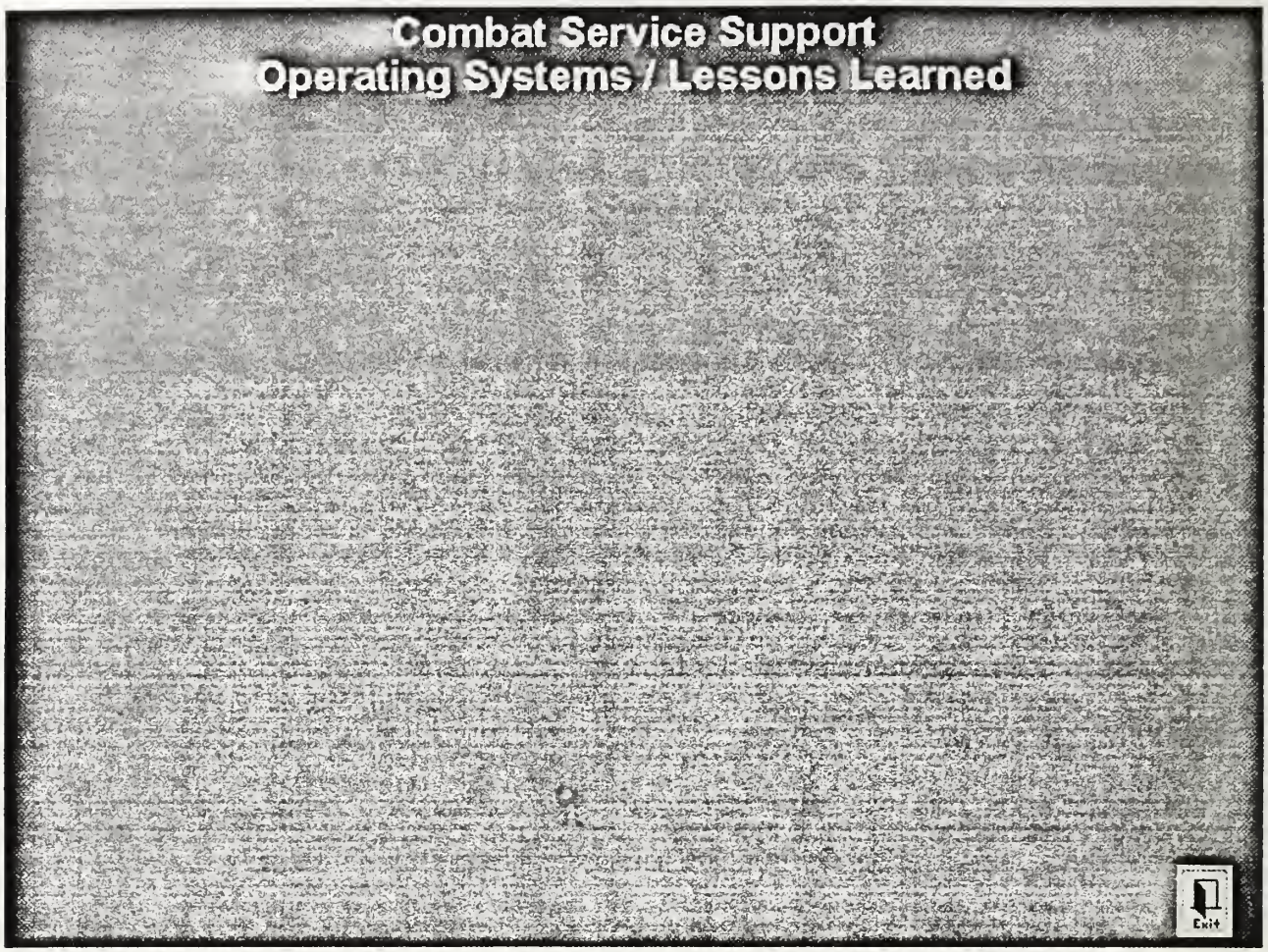

Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
COMMANDER'S INTENT
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
ADA
MCM
CSS
Main Menu


Command and Control
Operating Systems / Lessons Learned
Exit

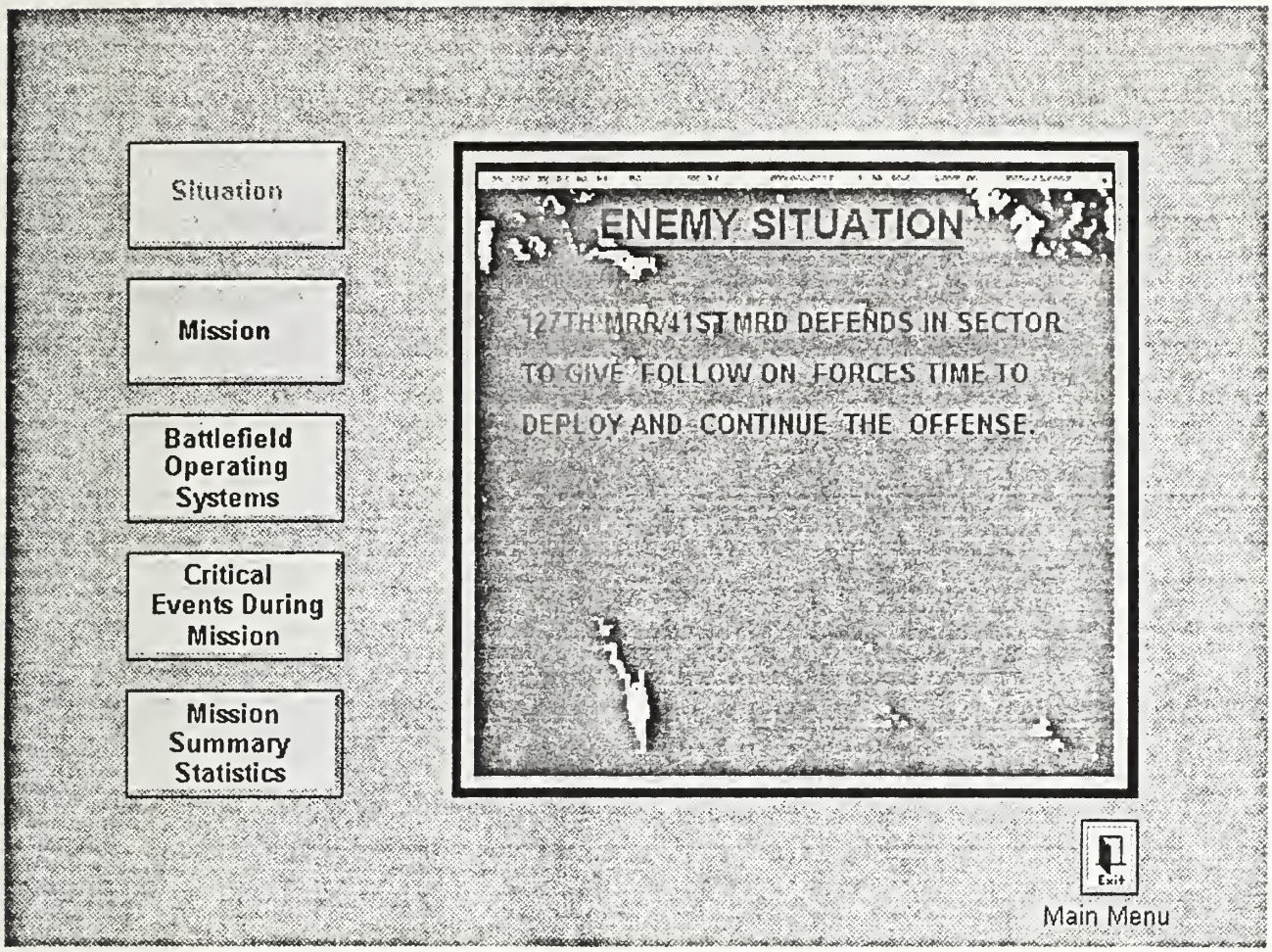
CCFACTS.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
ADA
MCM
Main Menu

CSSBOS.RLE



CSSFACTS.RLE



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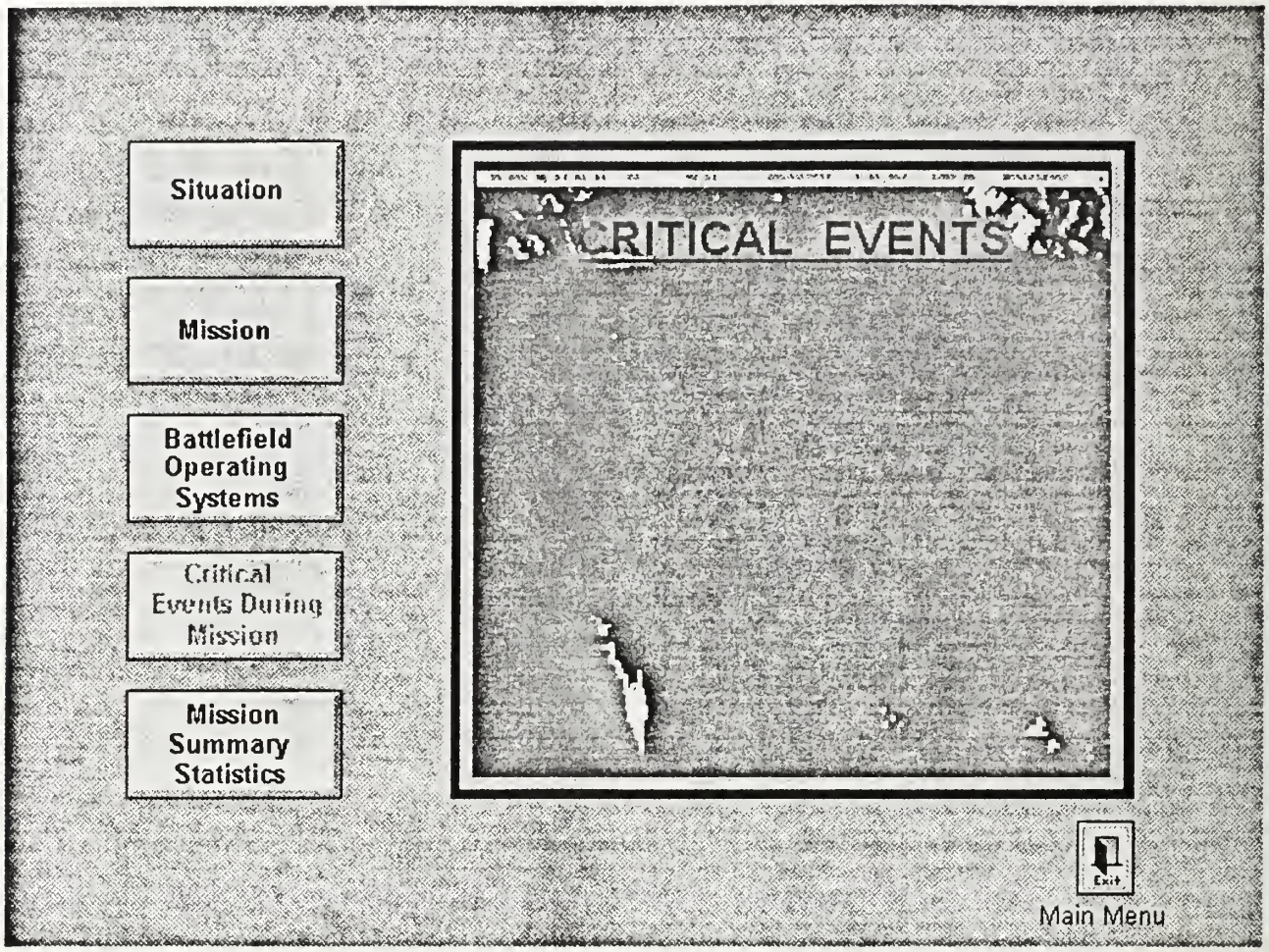
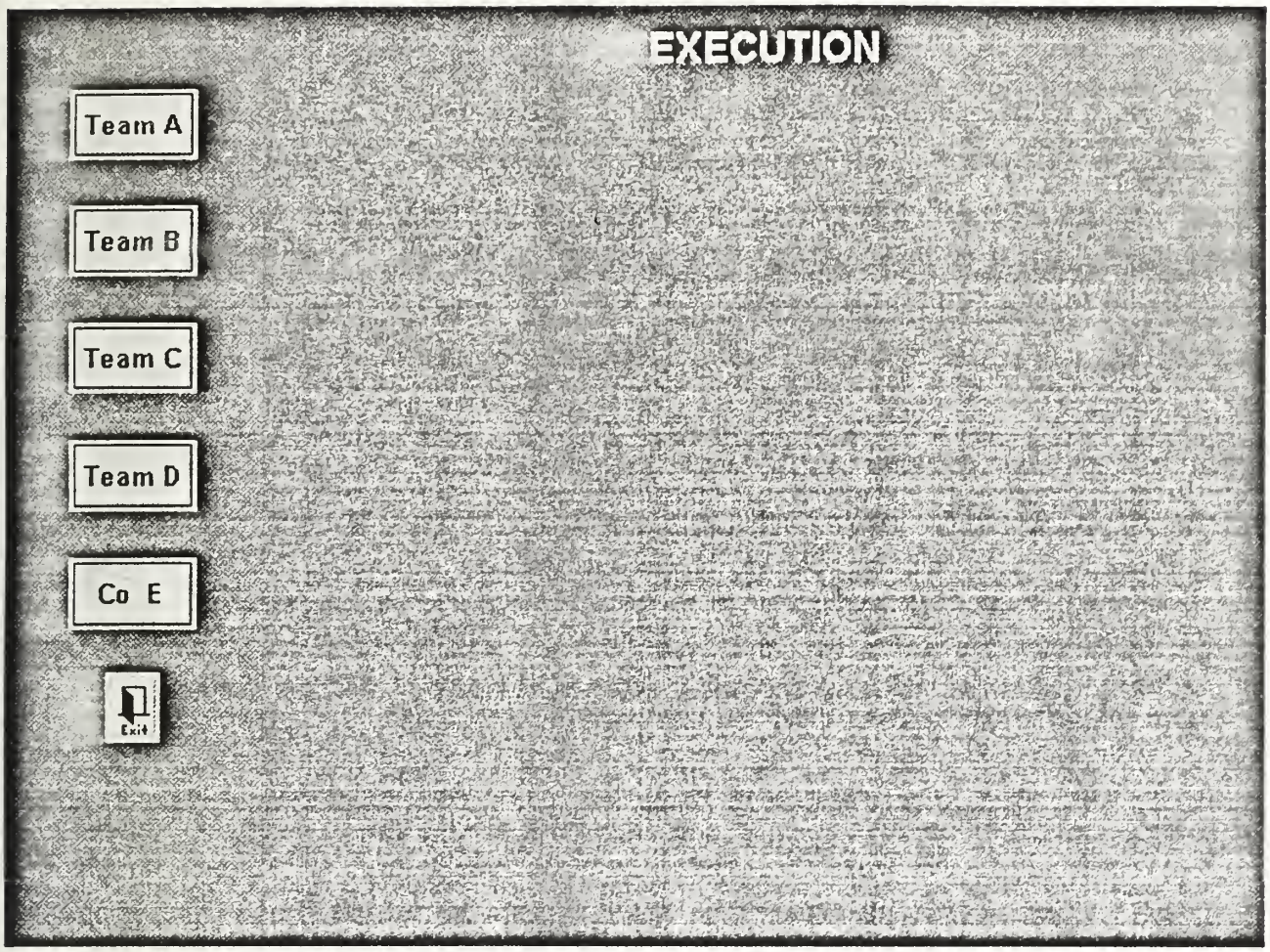
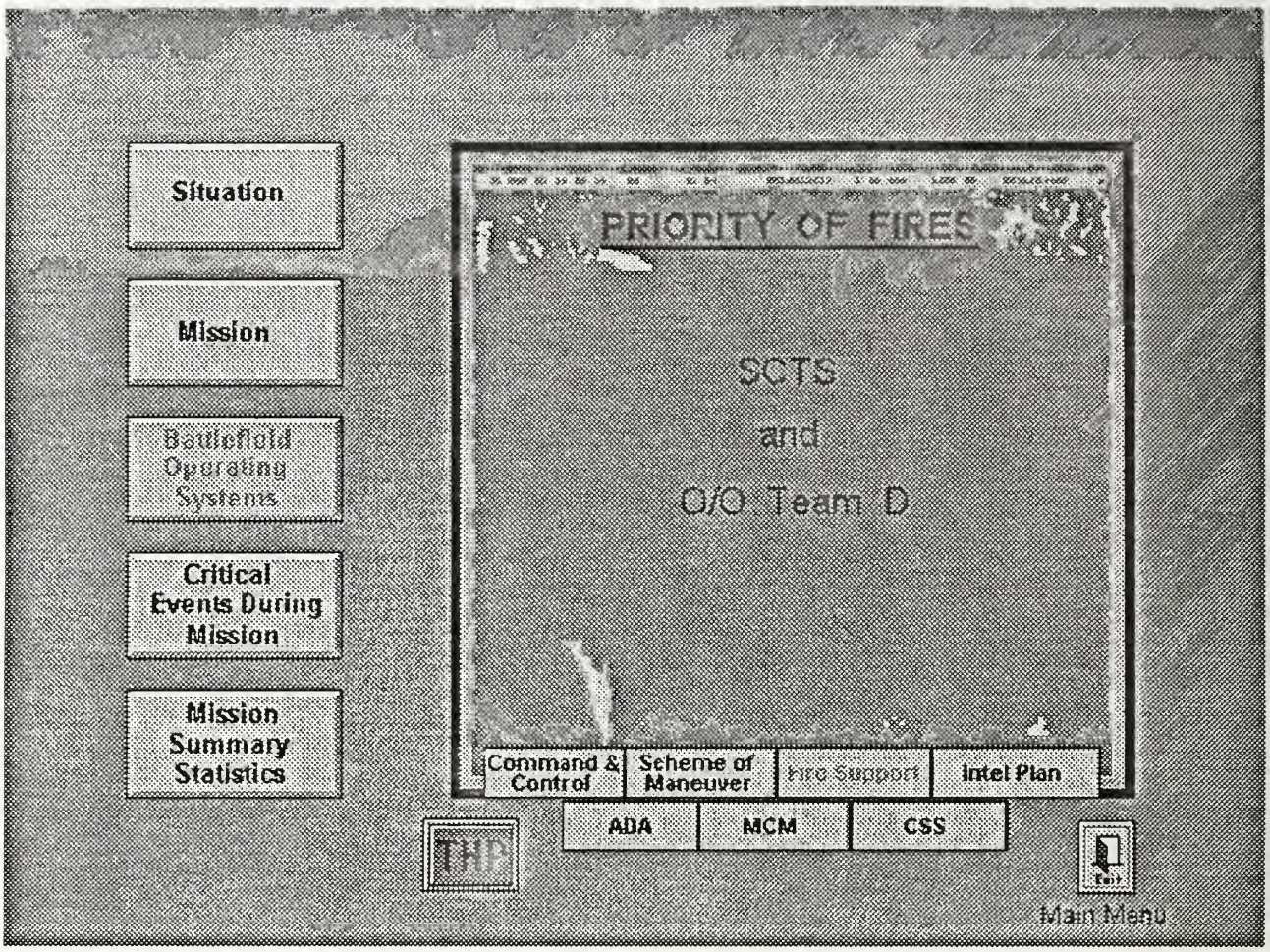

Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
CRITICAL EVENTS
Exit
Main Menu

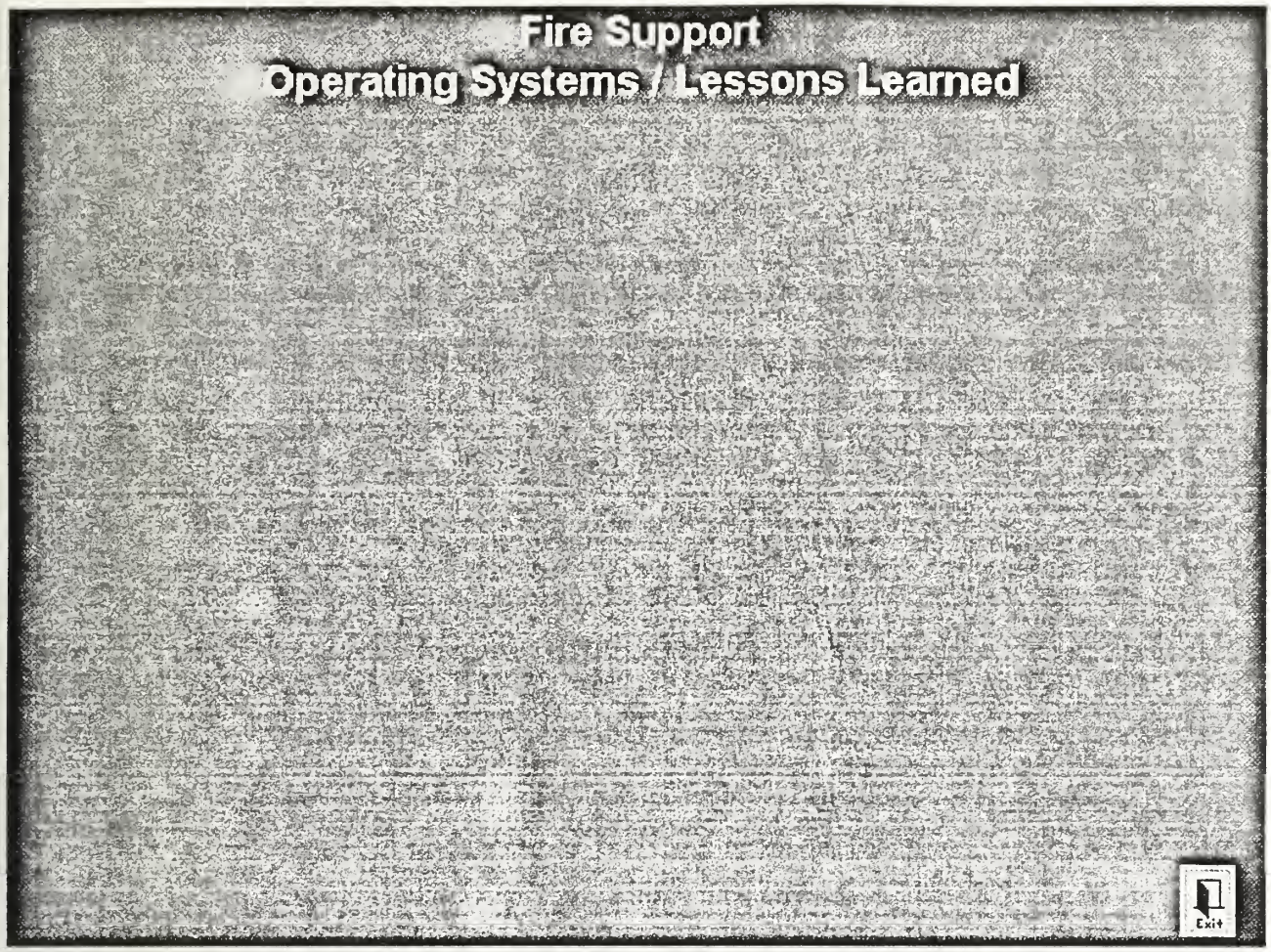
EVENTS.RLE



EXEC.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
PRIORITY OF FIRES
SCTS
and
O/O Team D
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
ADA
MCM
CSS
THP
Main Menu

FSBOS.RLE



FSFACTS.RLE

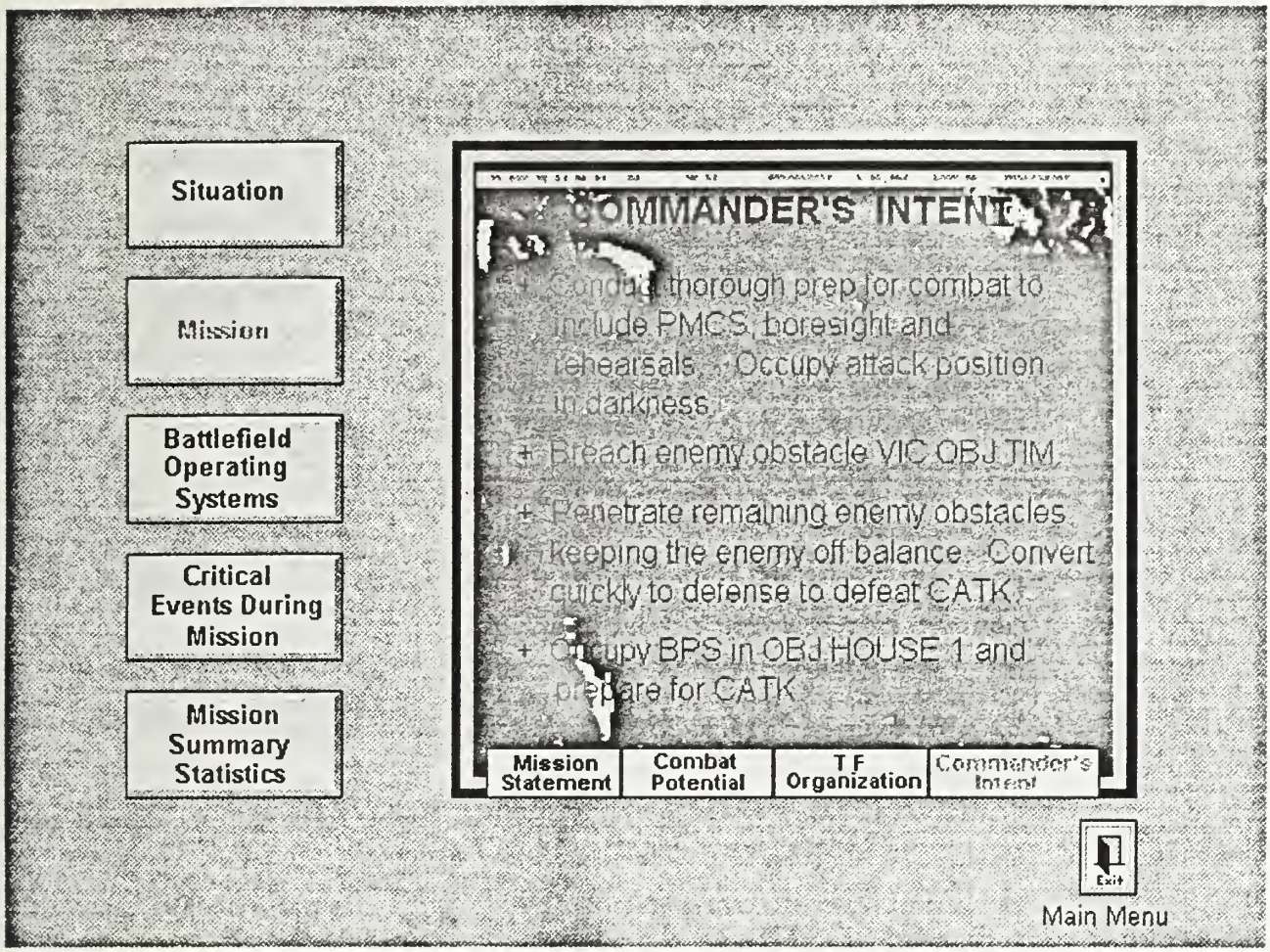
About this Document

This document was designed using the multimedia presentation software package IconAuthor. This is an interactive program that will give you the ability to rapidly assimulate the TASK FORCE ACTION SUMMARY tape information in any order! If you desire to review the MISSION SUMMARY STATISTICS before learning the MISSION, you may select that option.

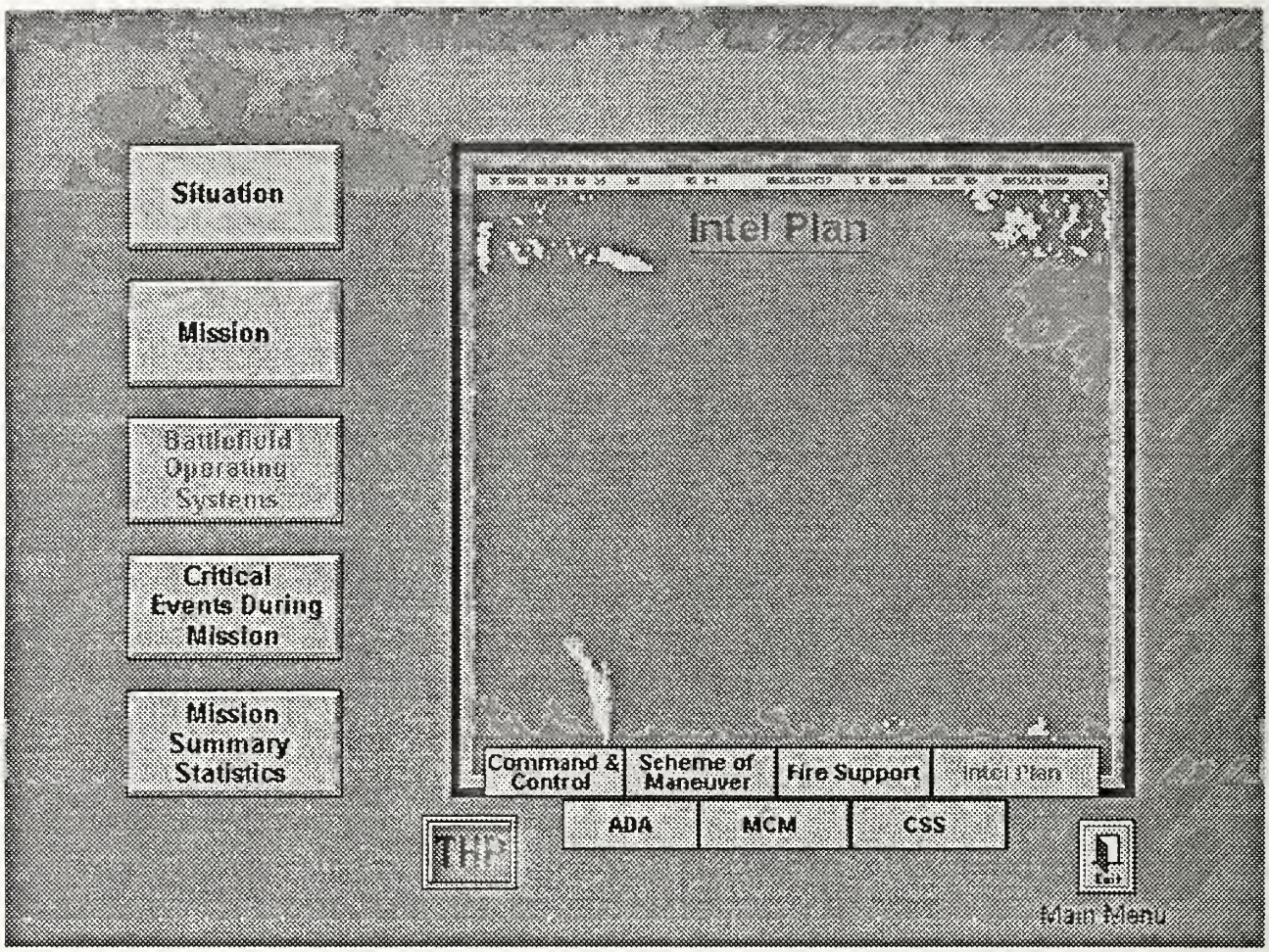
However, there are a few rules:

1. The left button of your mouse is the only button used.
2. You may only select options on the screen when the cursor is an arrow.
3. During audio playing, the cursor goes from being an arrow, to being a hand. You may stop the audio at any time by clicking the left mouse button. If you wish to restart the audio, depress the original button on the screen that displayed the screen.
4. A displayed on the screen denotes additional information that is available from the take home package. To access this information, click on the symbol.
5. An displayed anywhere on the screen will exit you from the screen if you click on it.

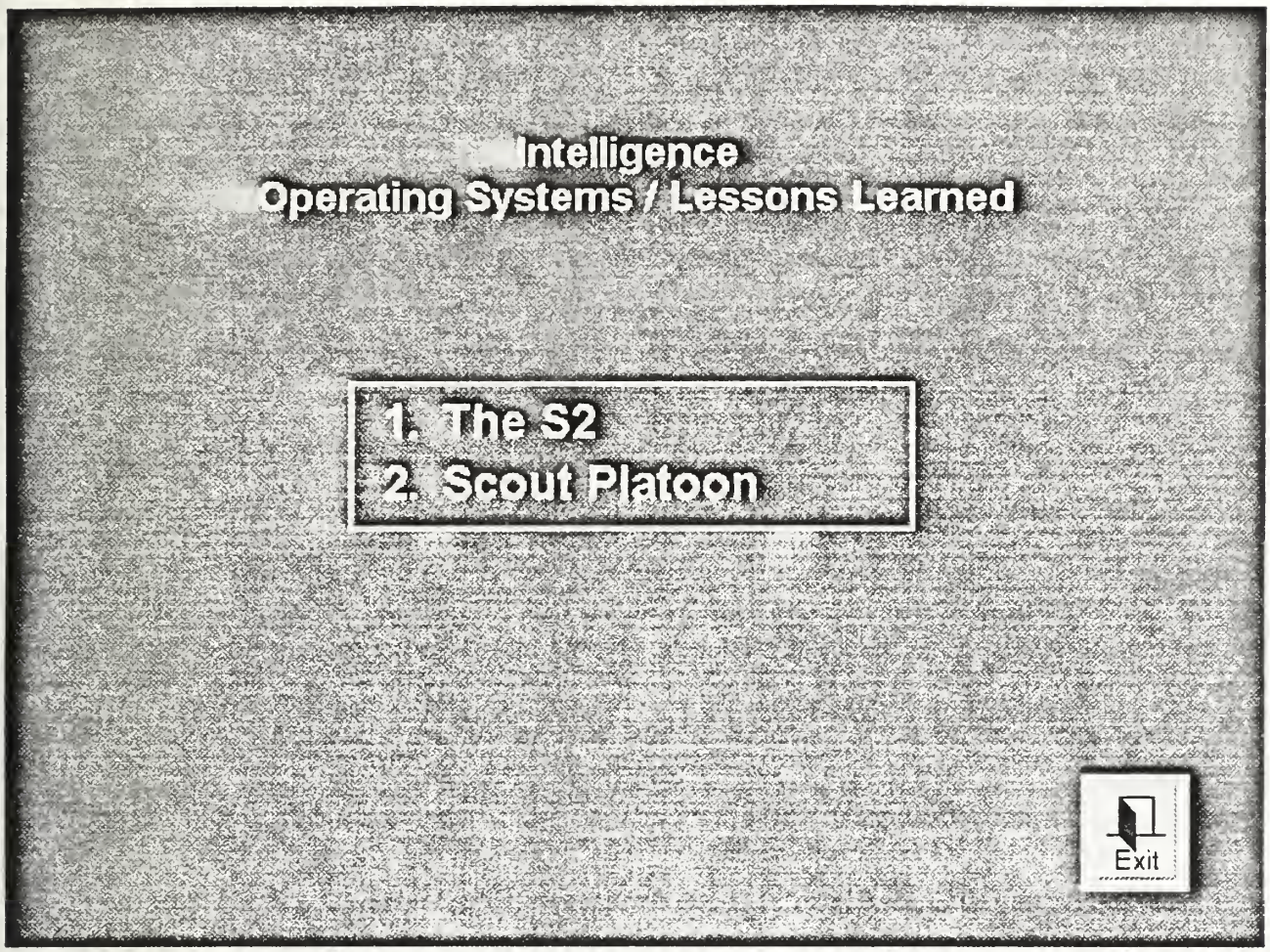
HELP.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
COMMANDER'S INTENT
+ Conduct thorough prep for combat to include PMCS, boresight and rehearsals. Occupy attack position in darkness.
+ Breach enemy obstacle VIC OBJ TIM.
+ Penetrate remaining enemy obstacles keeping the enemy off balance. Convert quickly to defense to defeat CATK.
+ Occupy BPS in OBJ HOUSE 1 and prepare for CATK.
Mission Statement
Combat Potential
TF Organization
Commander's Intent
Exit
Main Menu

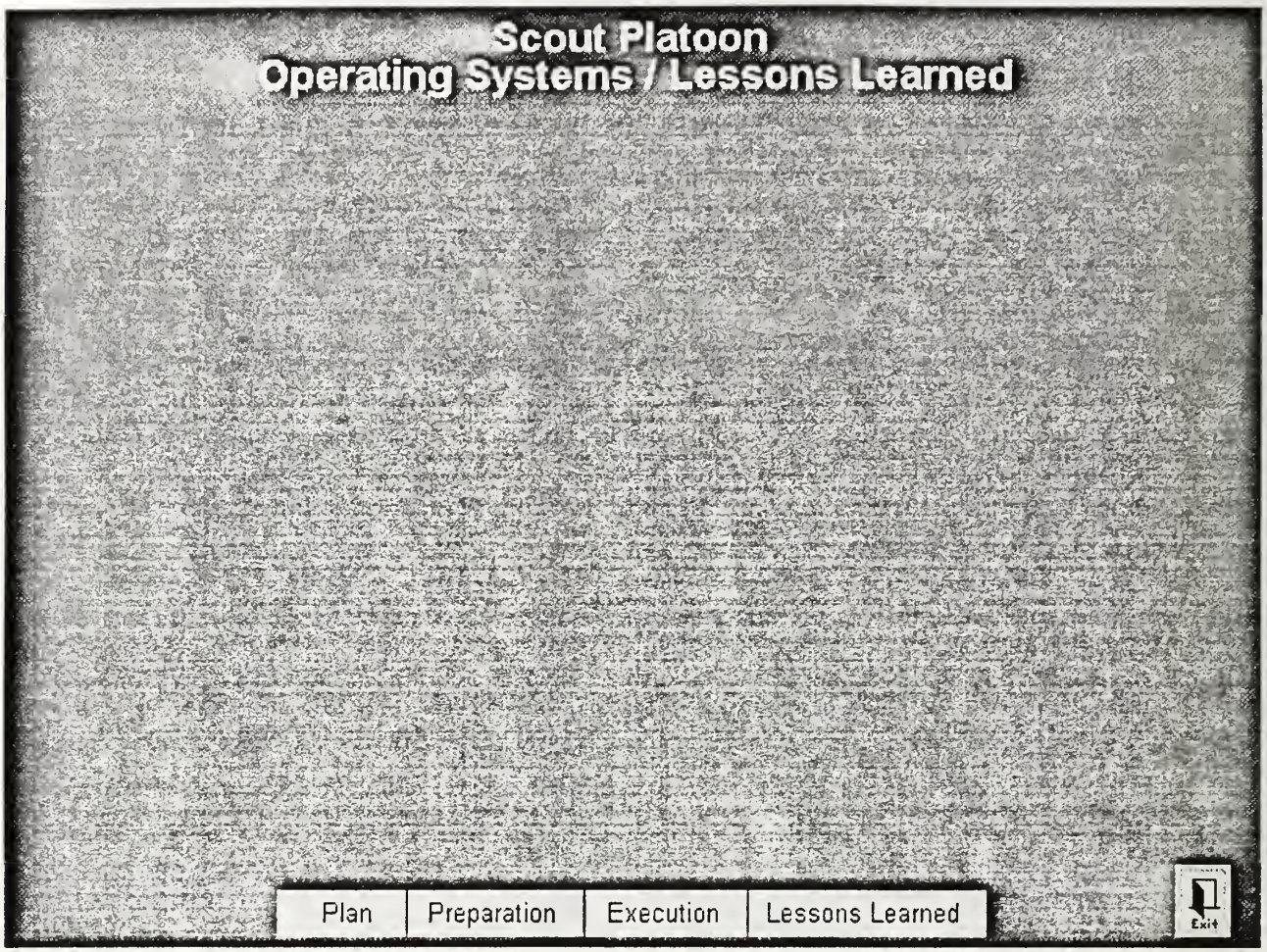
INTENT1.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
Intel Plan
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
ADA
MCM
CSS
Main Menu

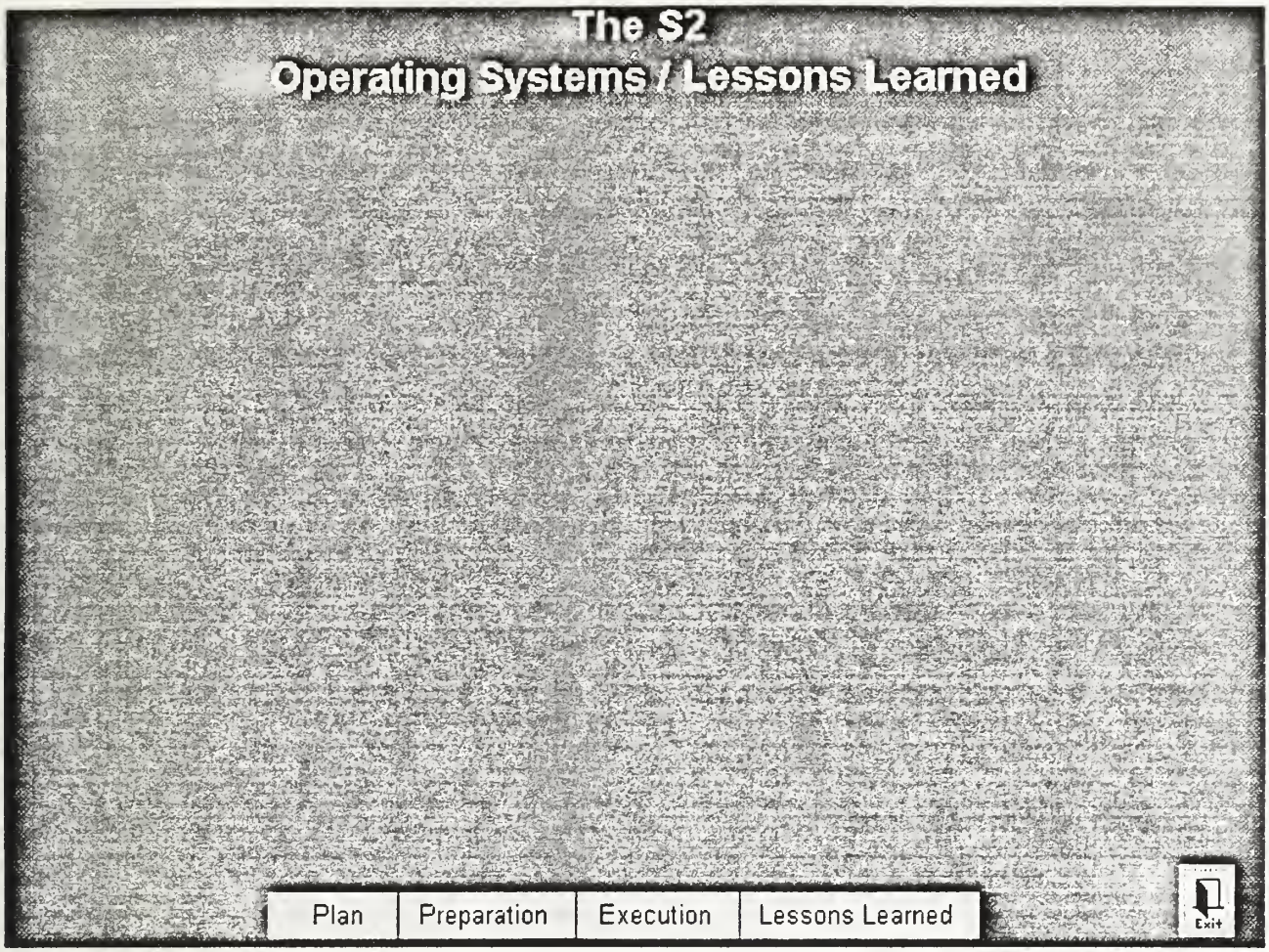
IPBOS.RLE


Intelligence
Operating Systems / Lessons Learned
1. The S2
2. Scout Platoon
Exit

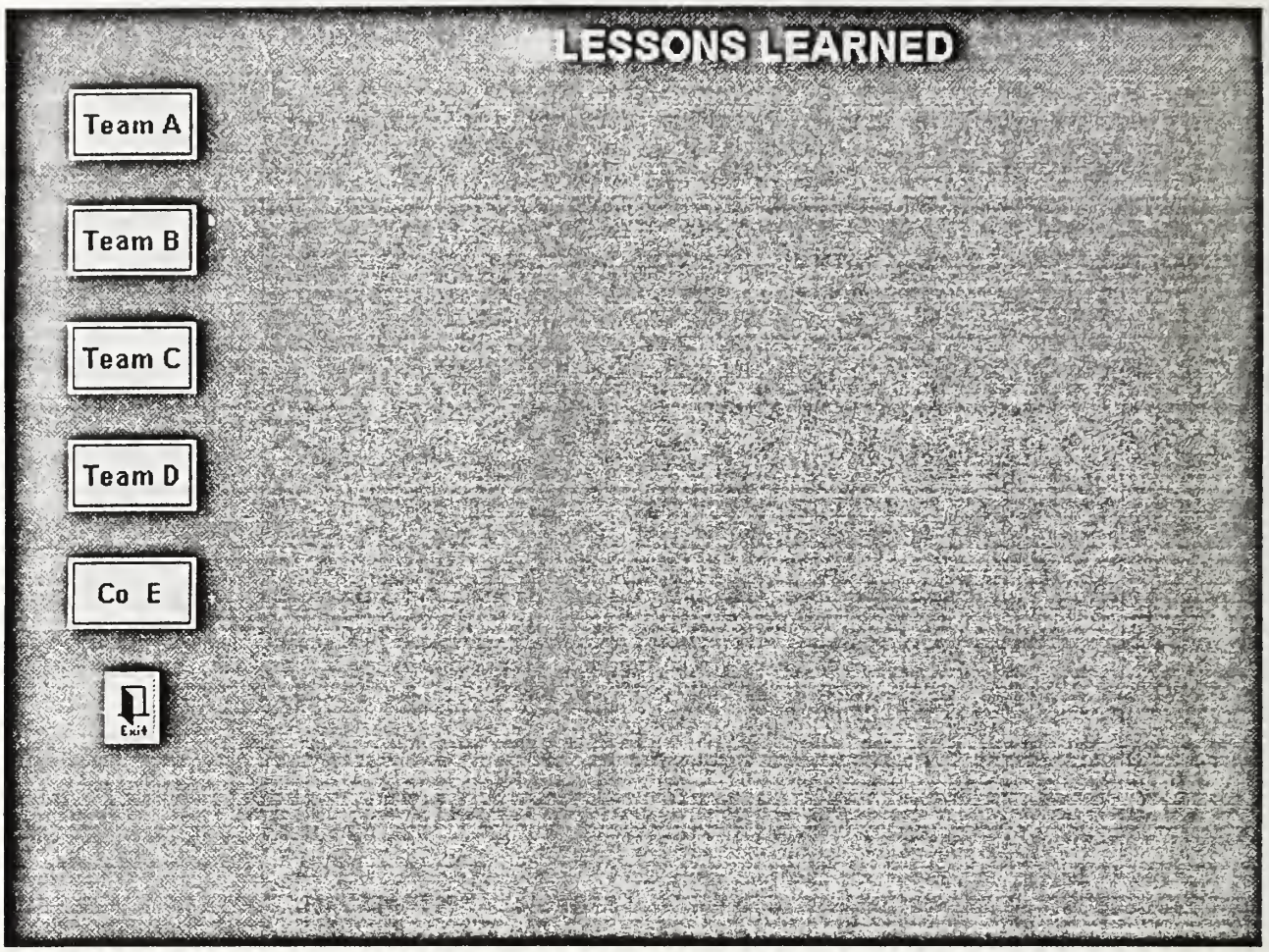
IPMENU.RLE


Scout Platoon
Operating Systems / Lessons Learned
Plan
Preparation
Execution
Lessons Learned
Exit

IPSP.RLE


The S2
Operating Systems / Lessons Learned
Plan
Preparation
Execution
Lessons Learned
Exit

IPS2.RLE



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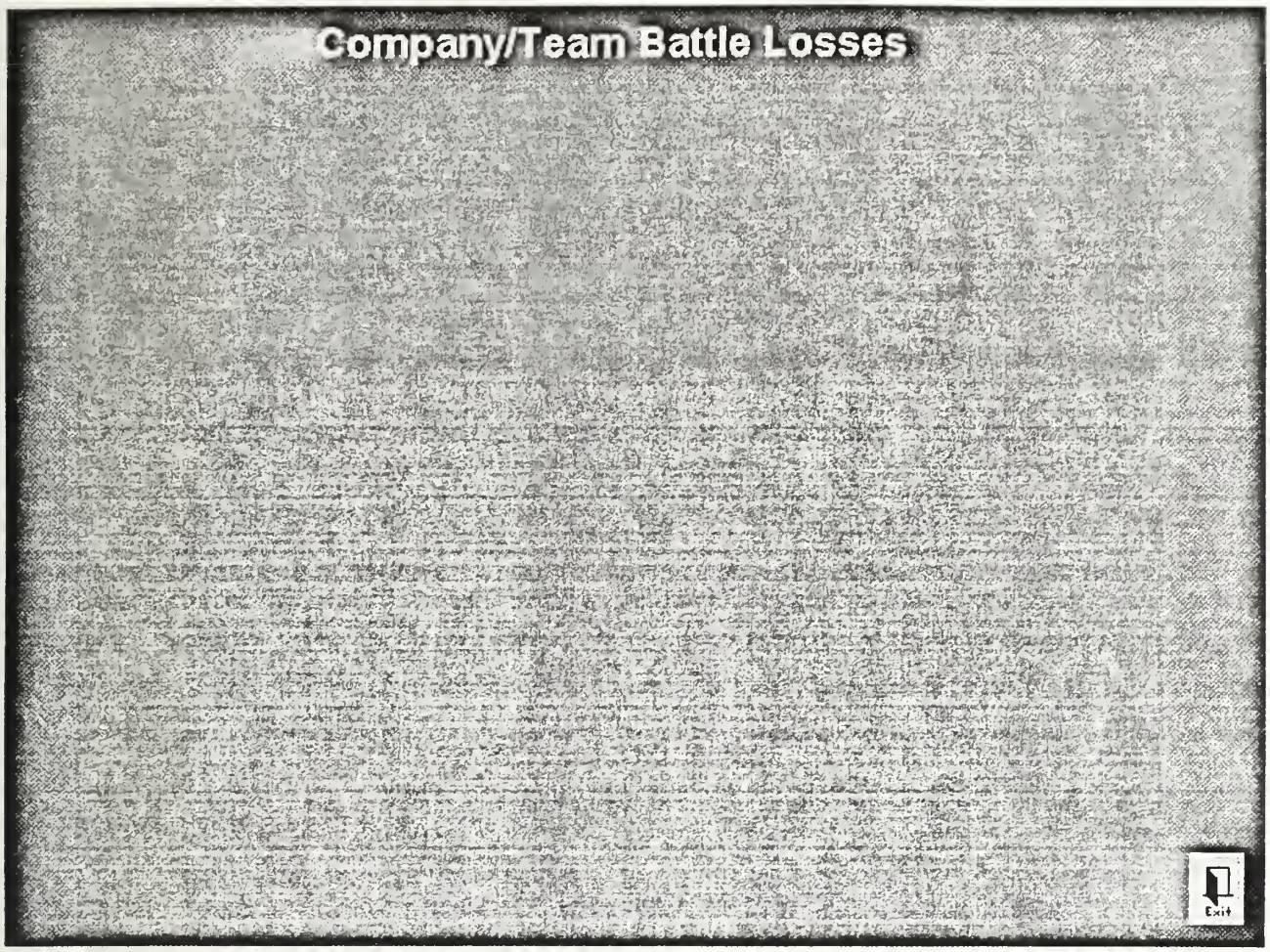

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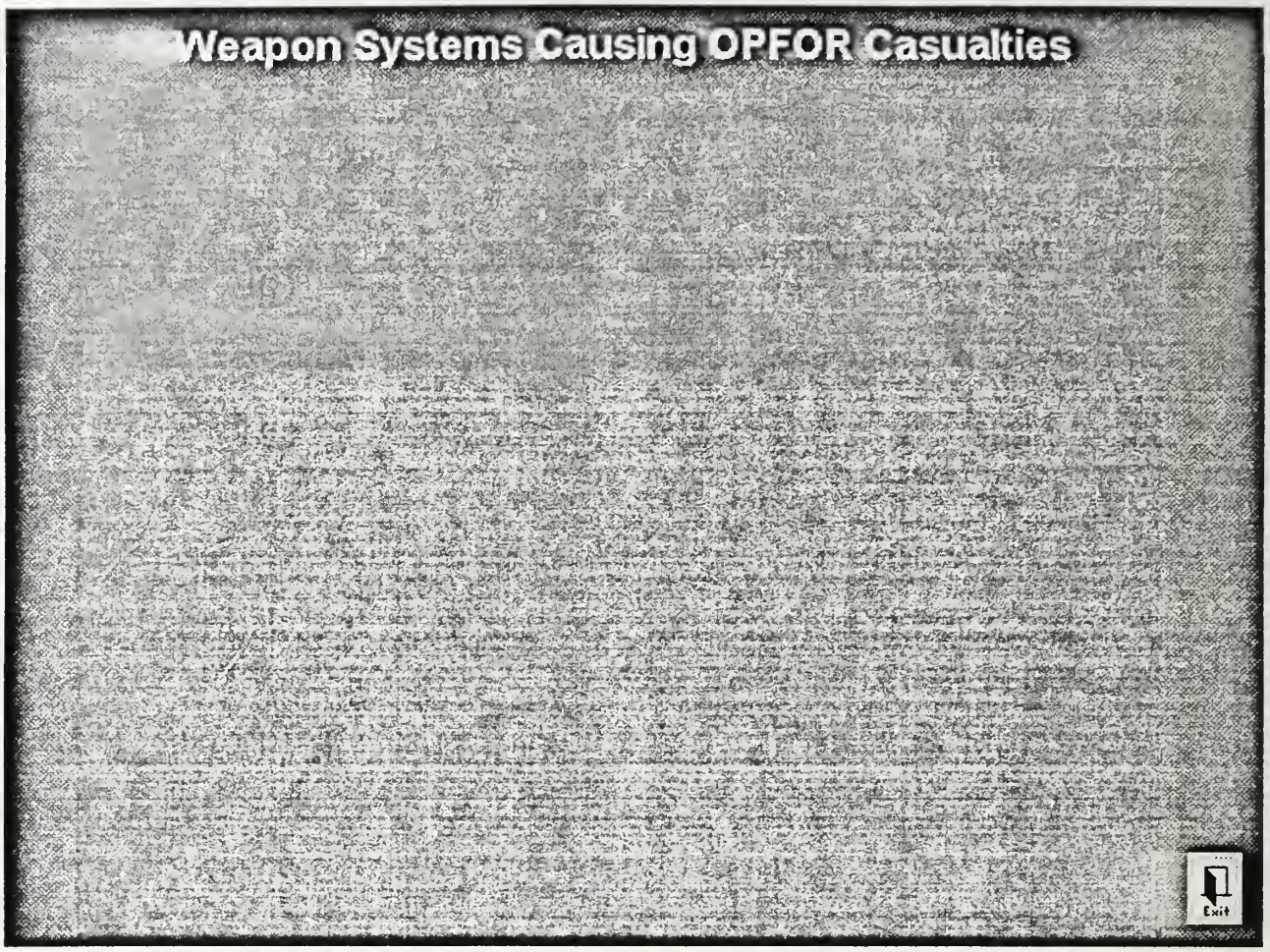
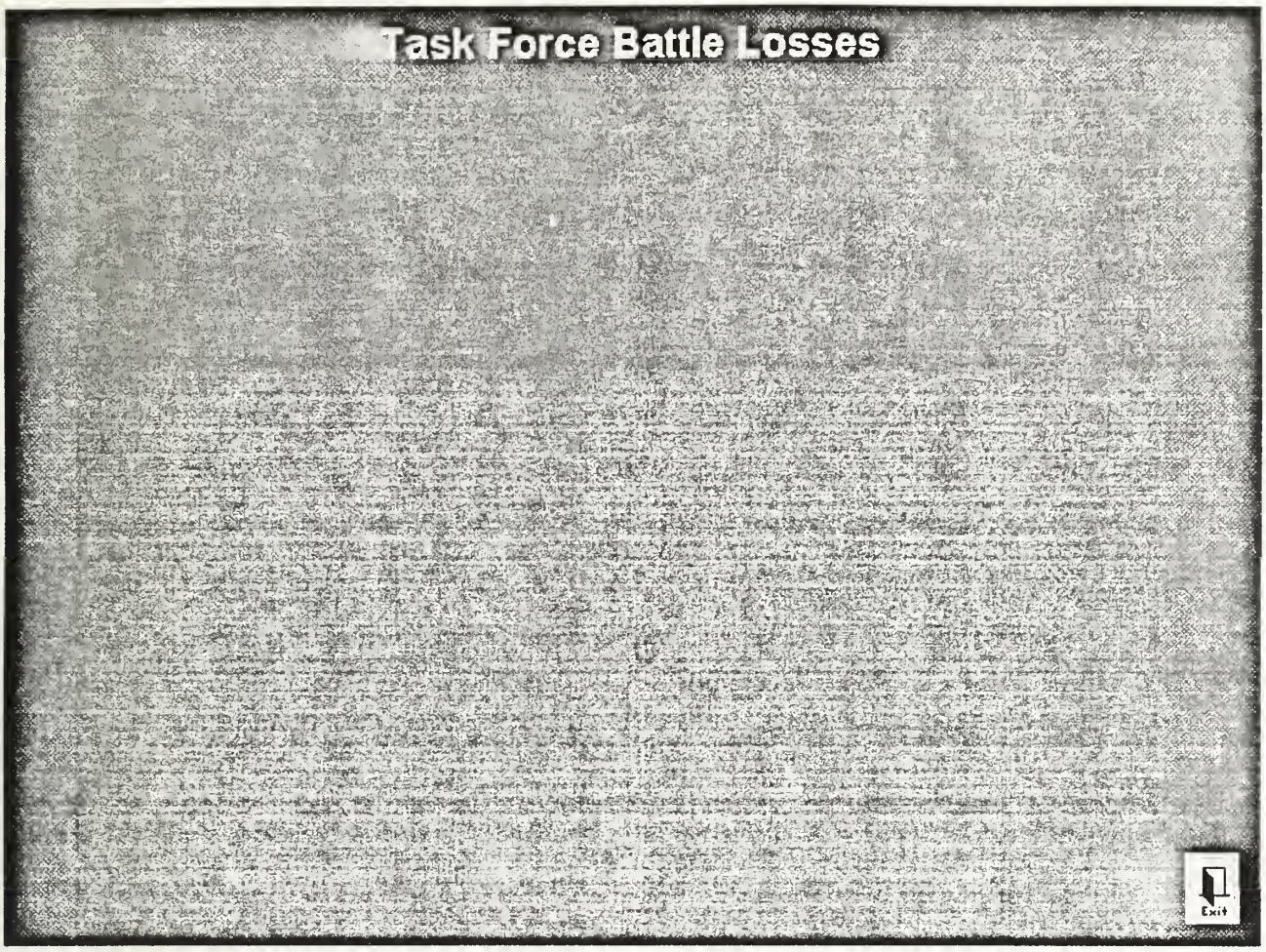
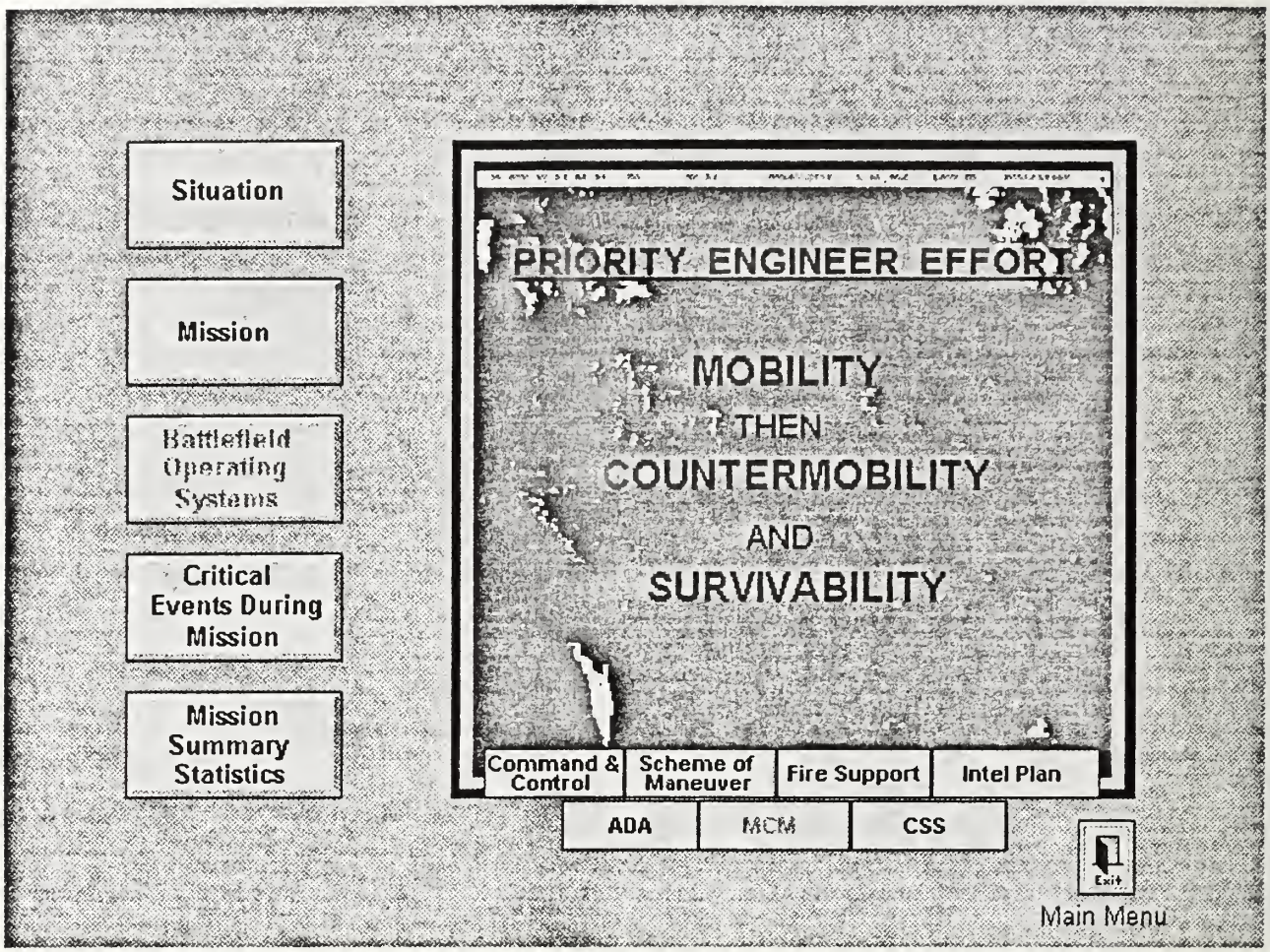


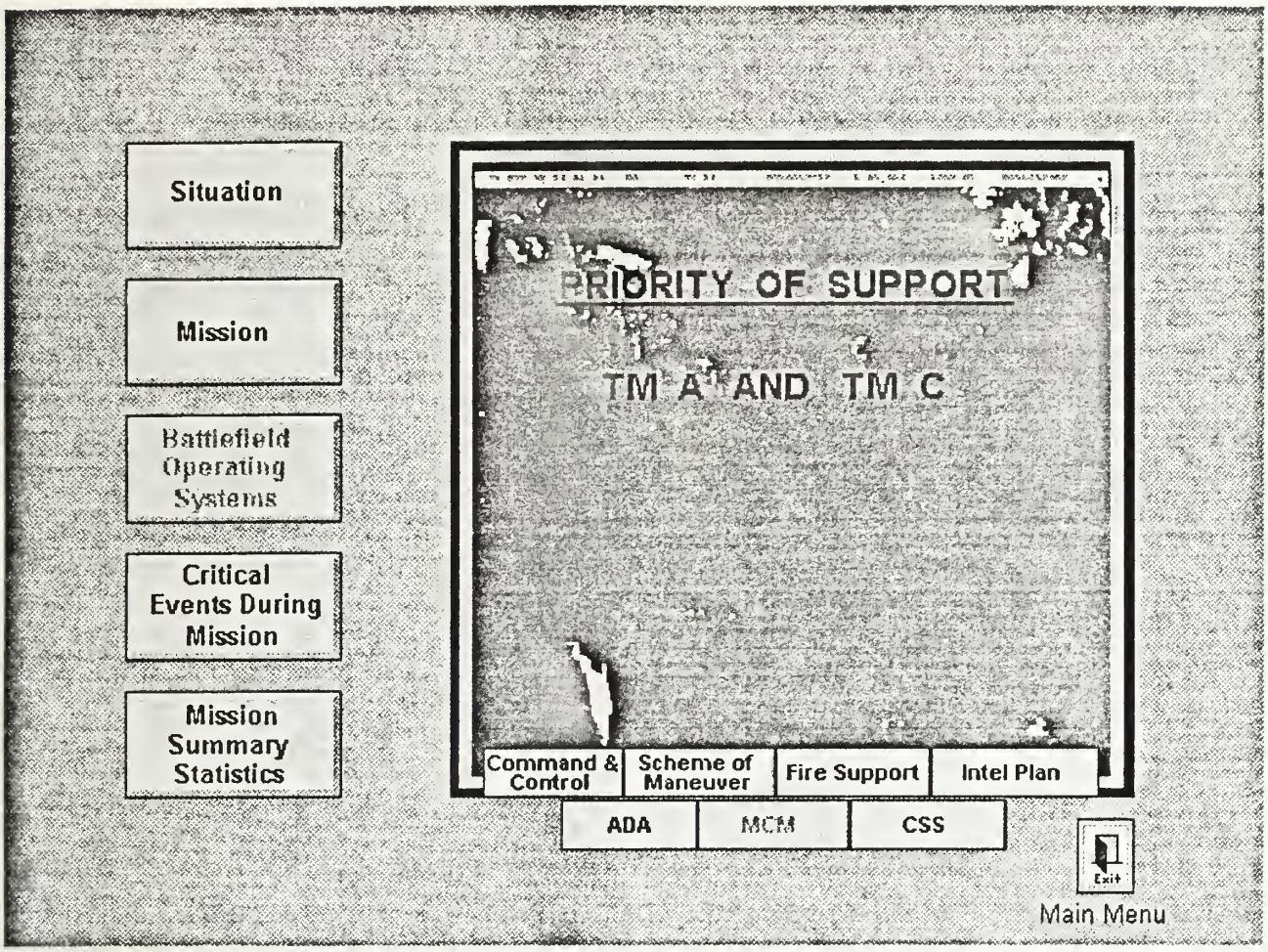
LOSSOPFO.RLE



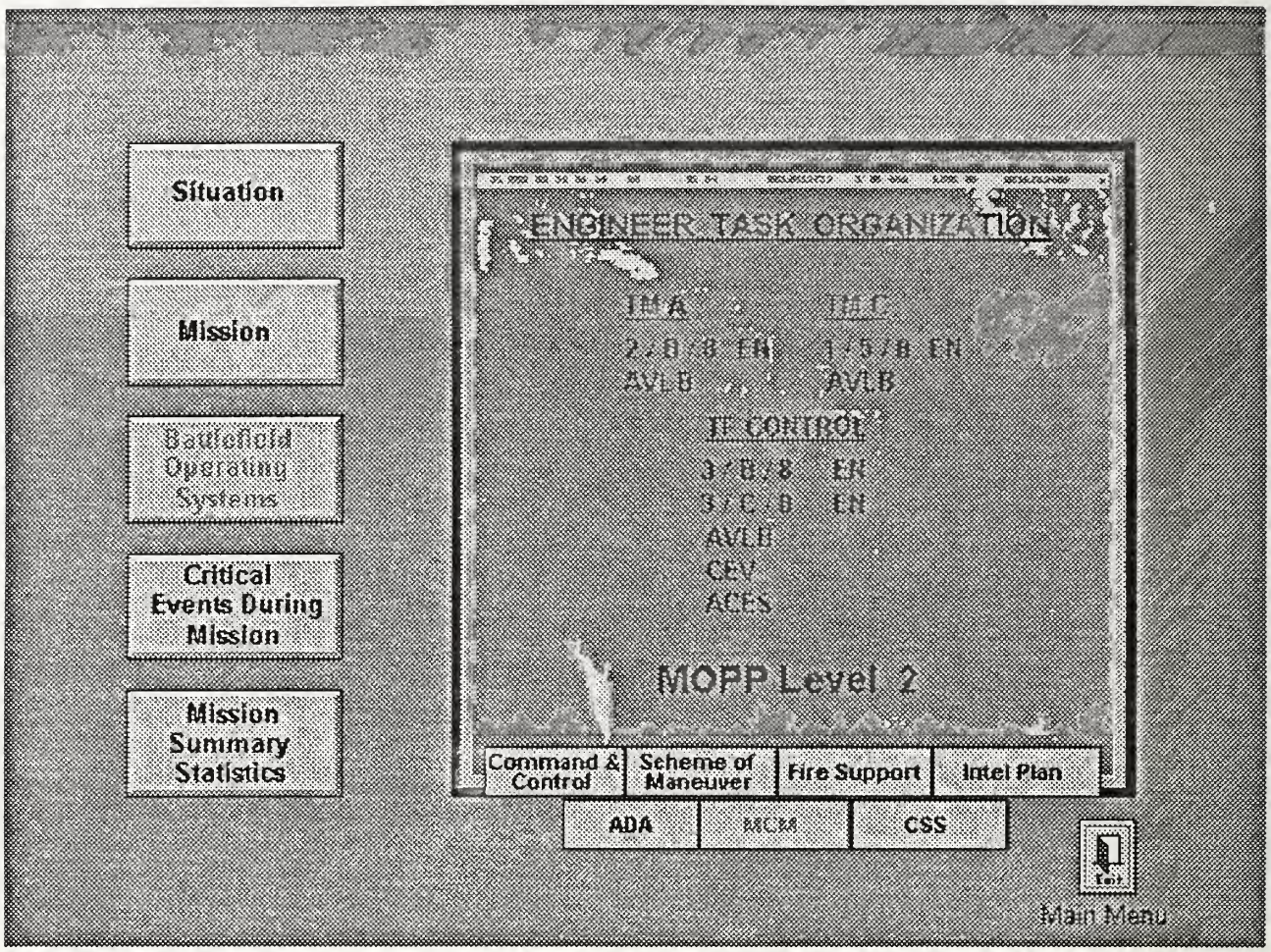
LOSSTF.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
PRIORITY ENGINEER EFFORT
MOBILITY
THEN
COUNTERMOBILITY
AND
SURVIVABILITY
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
ADA
MCM
CSS
Exit
Main Menu

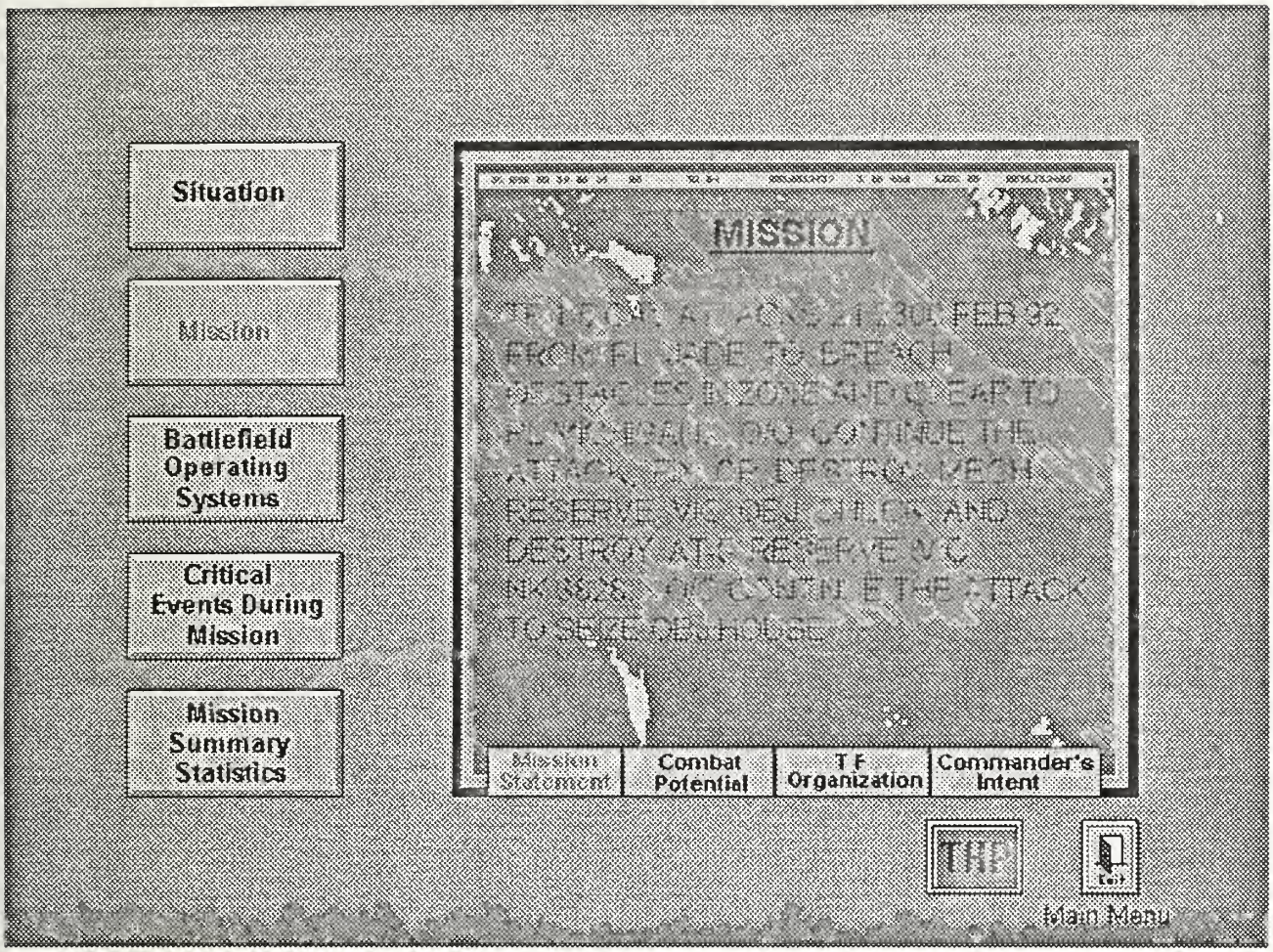
MCMBOS.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
PRIORITY OF SUPPORT
1
TM A
2
AND TM C
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
ADA
MCM
CSS
Exit
Main Menu

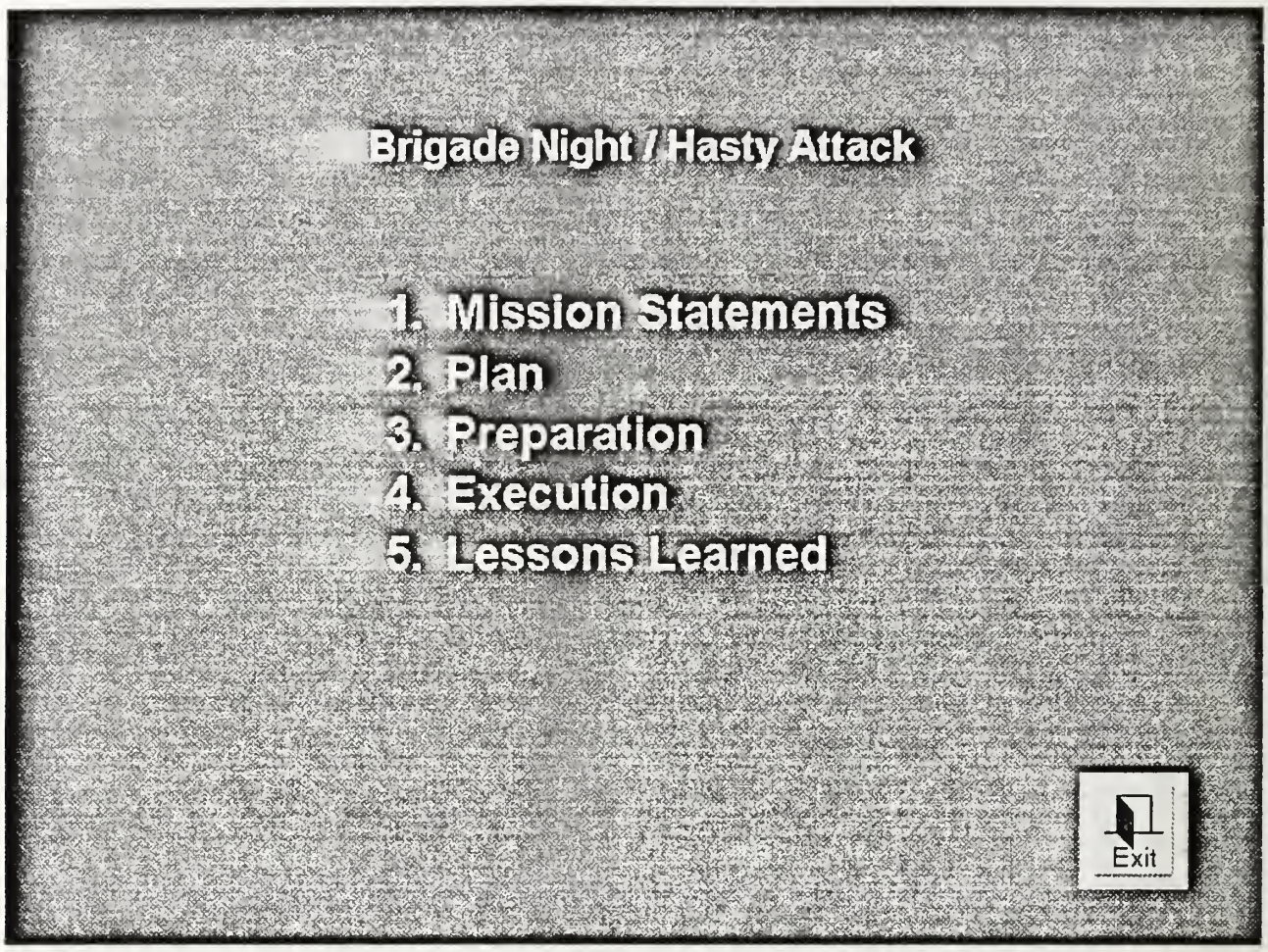
MCMBOS1.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
ENGINEER TASK ORGANIZATION
MOPP Level 2
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
ADA
CSS
Main Menu

MCMBOS2.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
MISSION
Mission Statement
Combat Potential
T F Organization
Commander's Intent
THE
Main Menu

MISSION.RLE



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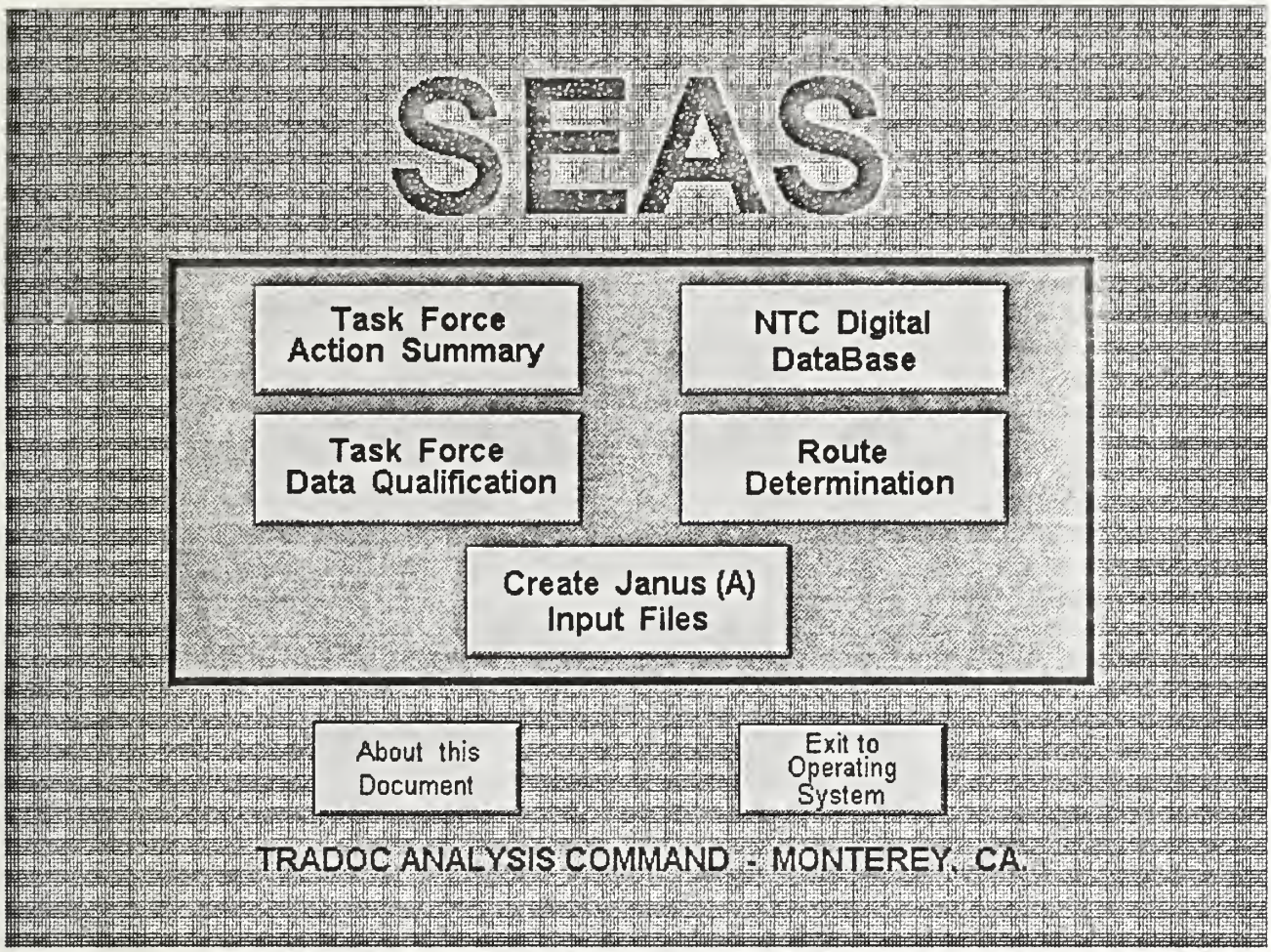
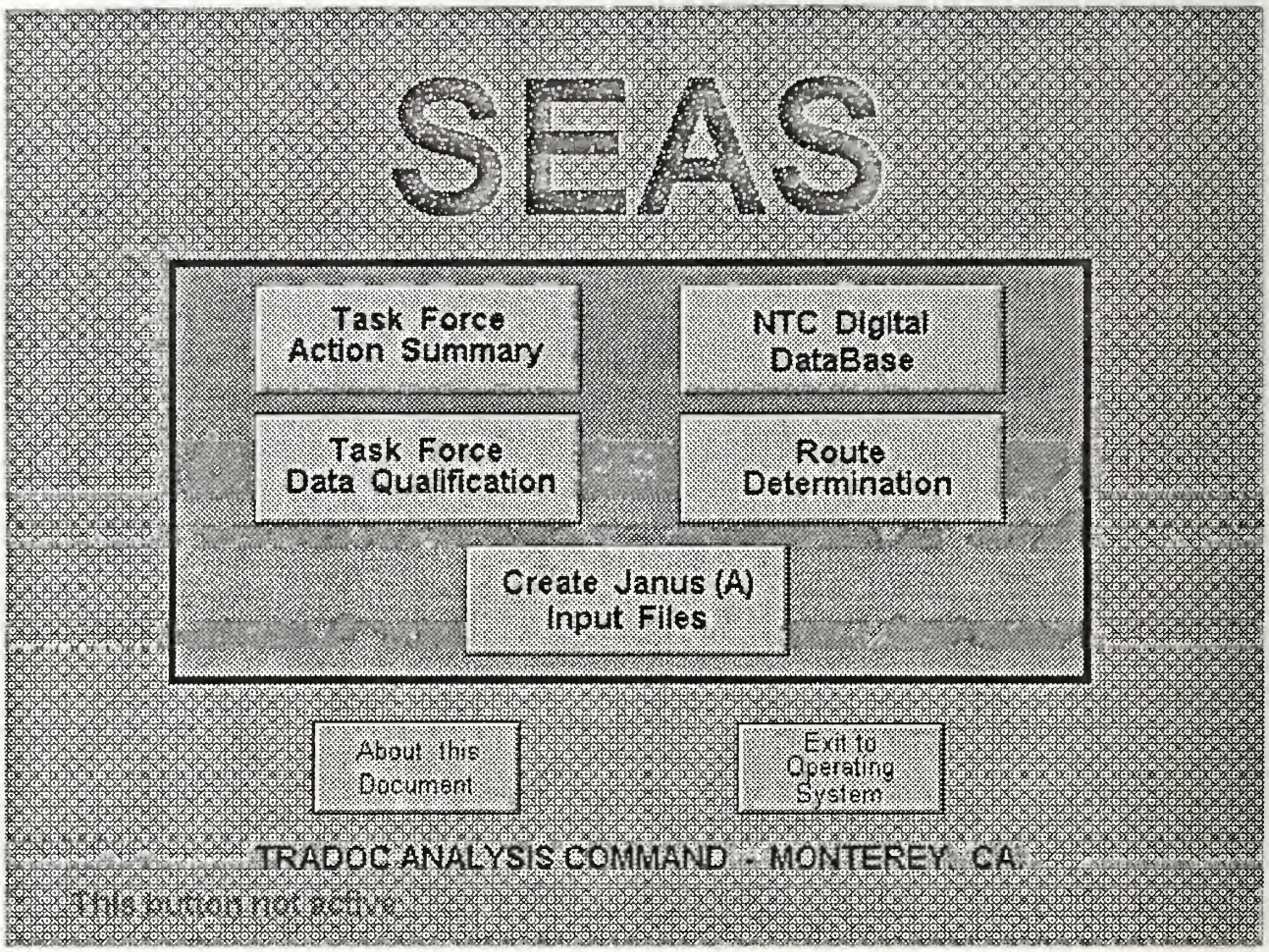
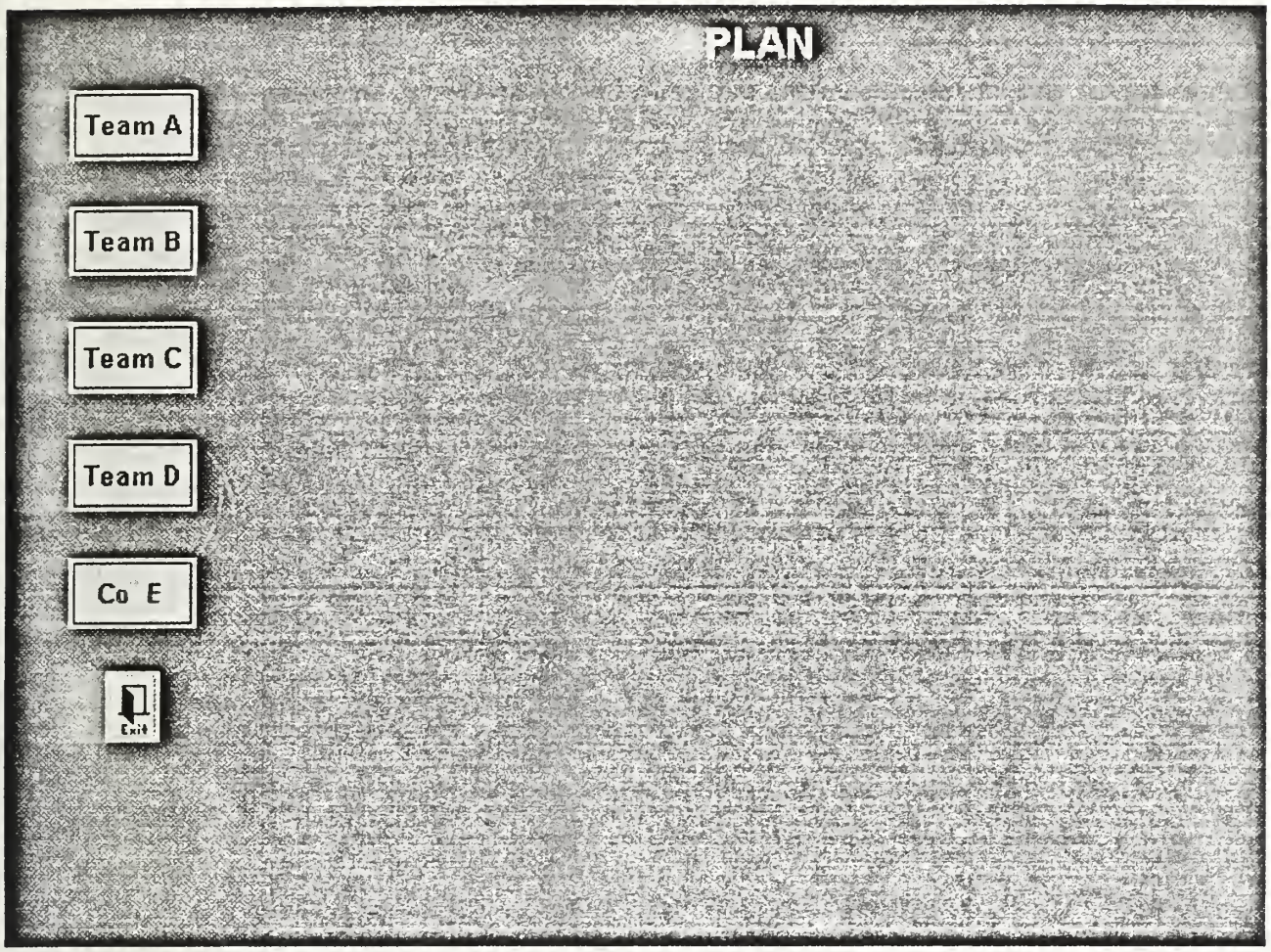

SEAS
Task Force Action Summary
NTC Digital DataBase
Task Force Data Qualification
Route Determination
Create Janus (A) Input Files
About this Document
Exit to Operating System
TRADOC ANALYSIS COMMAND - MONTEREY, CA.

MMENU.RLE


SEAS
Task Force Action Summary
NTC Digital DataBase
Task Force Data Qualification
Route Determination
Create Janus (A) Input Files
About this Document
Exit to Operating System
TRADOC ANALYSIS COMMAND - MONTEREY, CA.
This button not active

MMENU1.RLE



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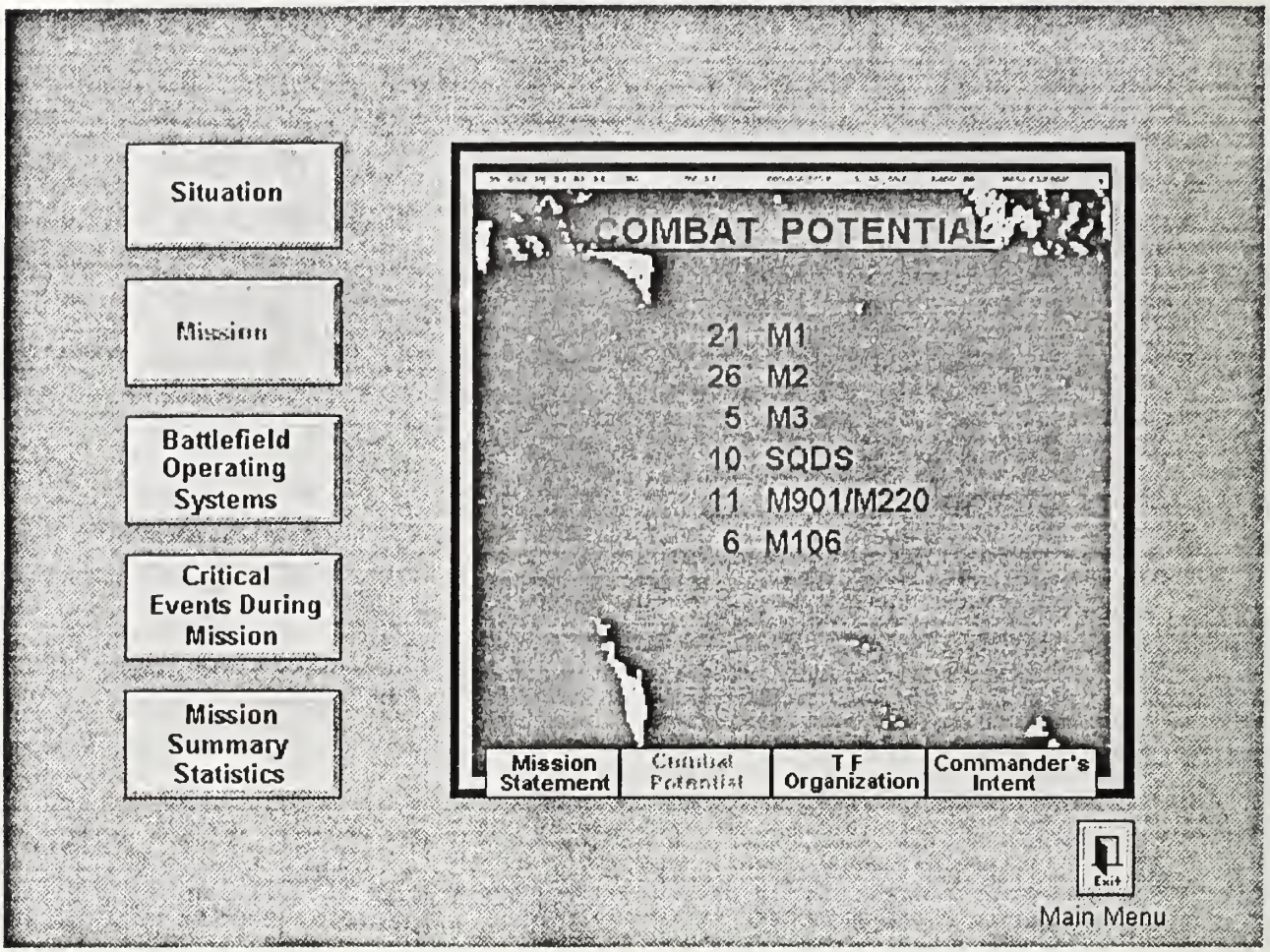

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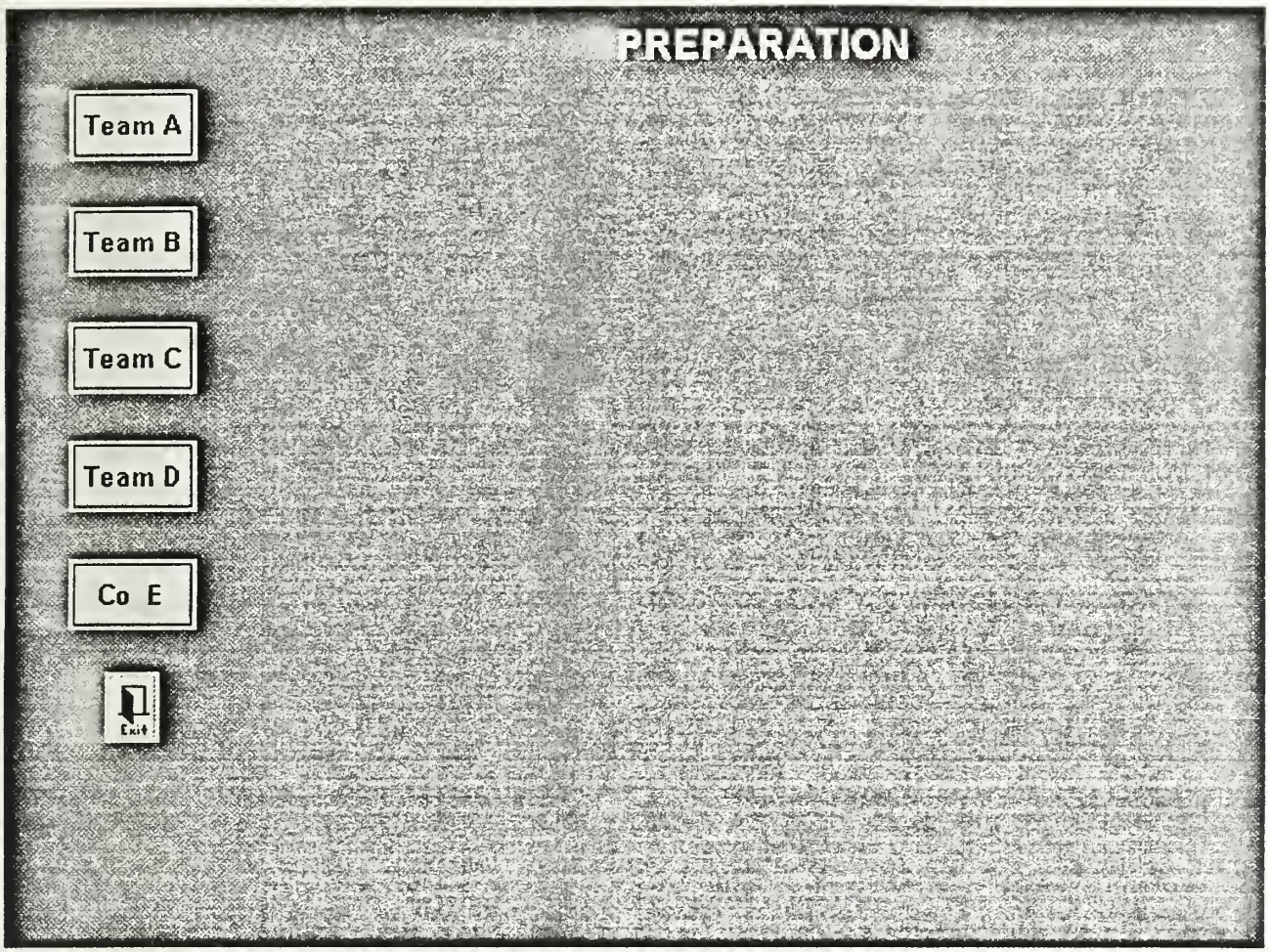

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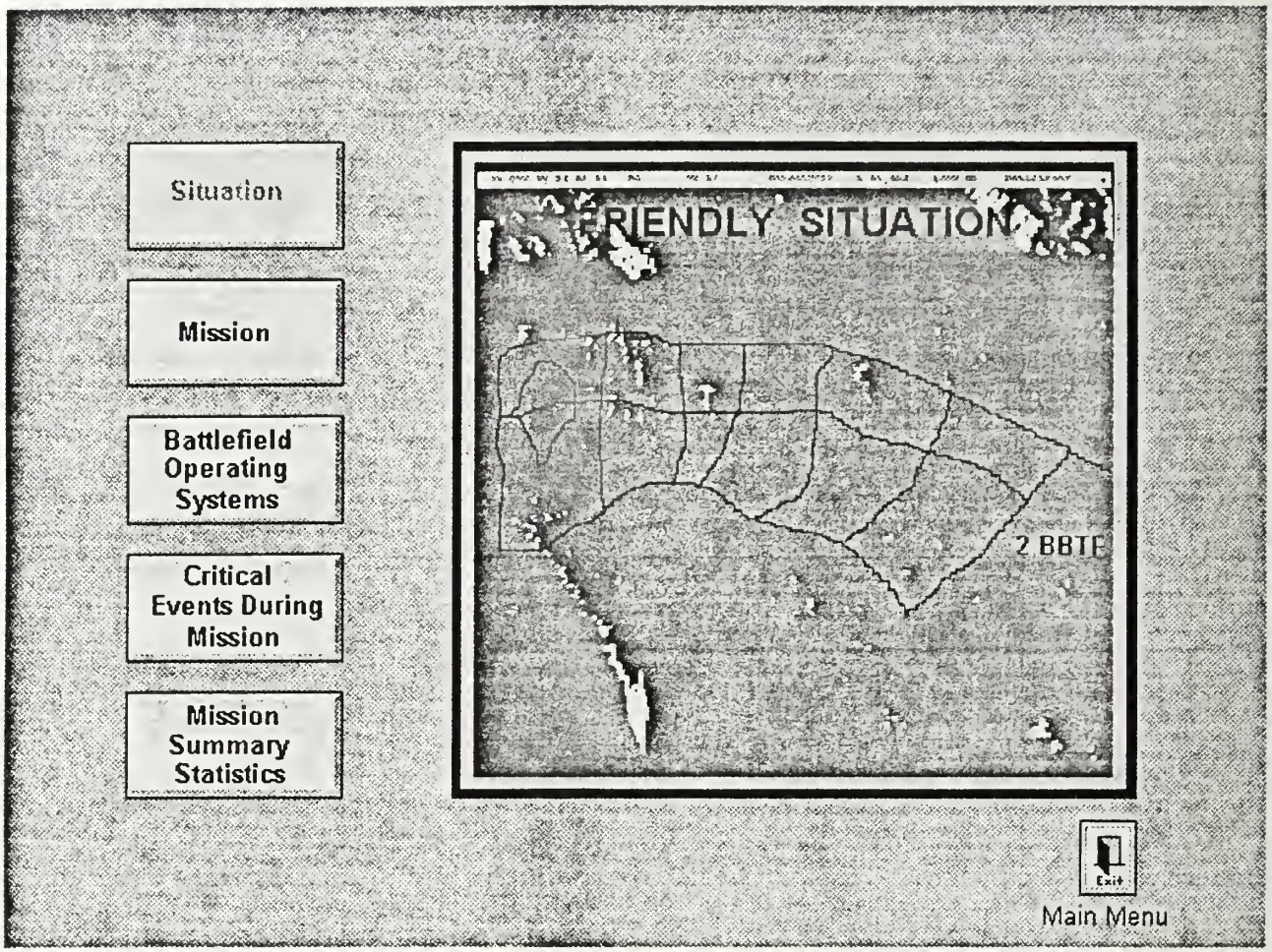
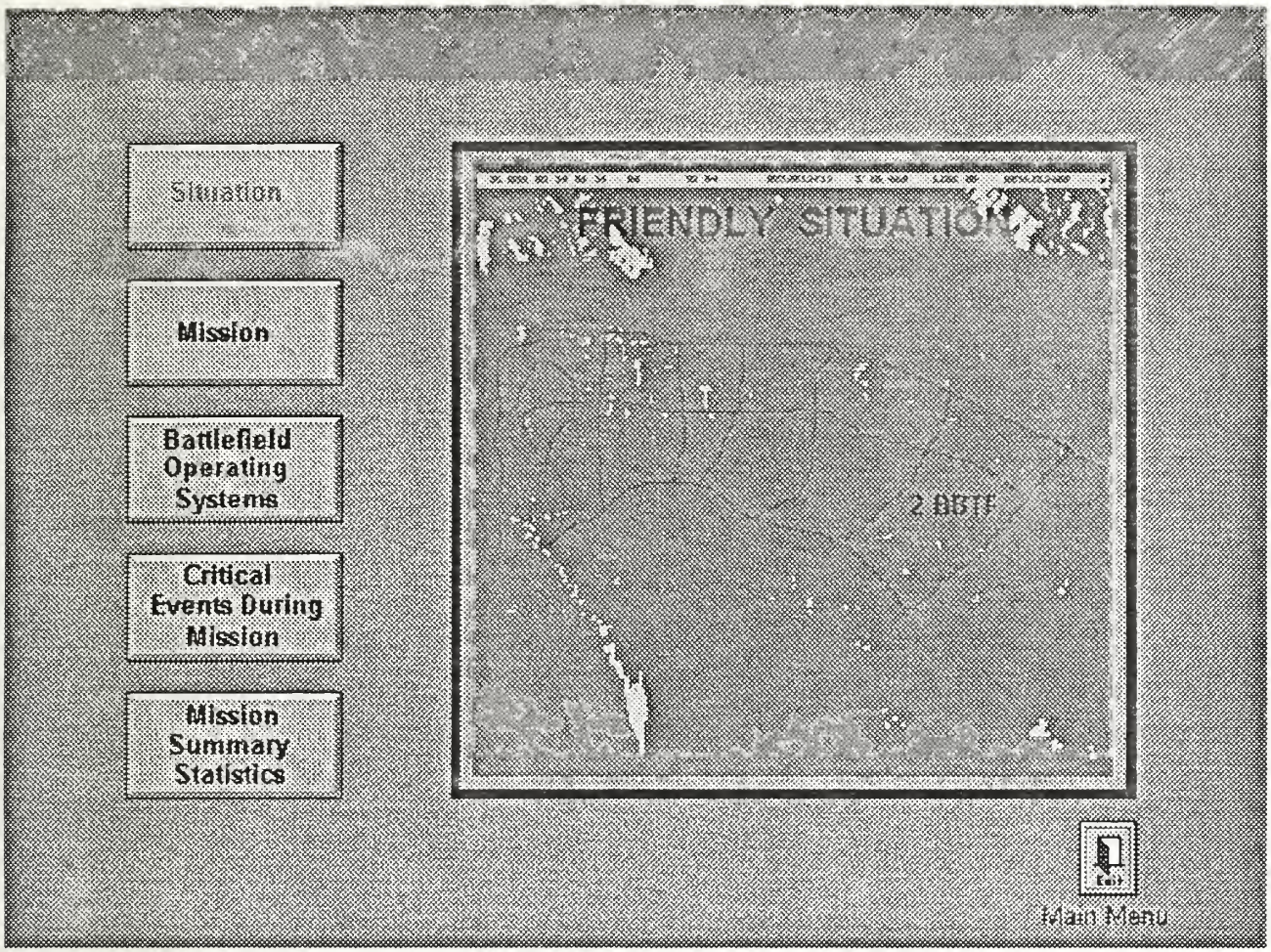
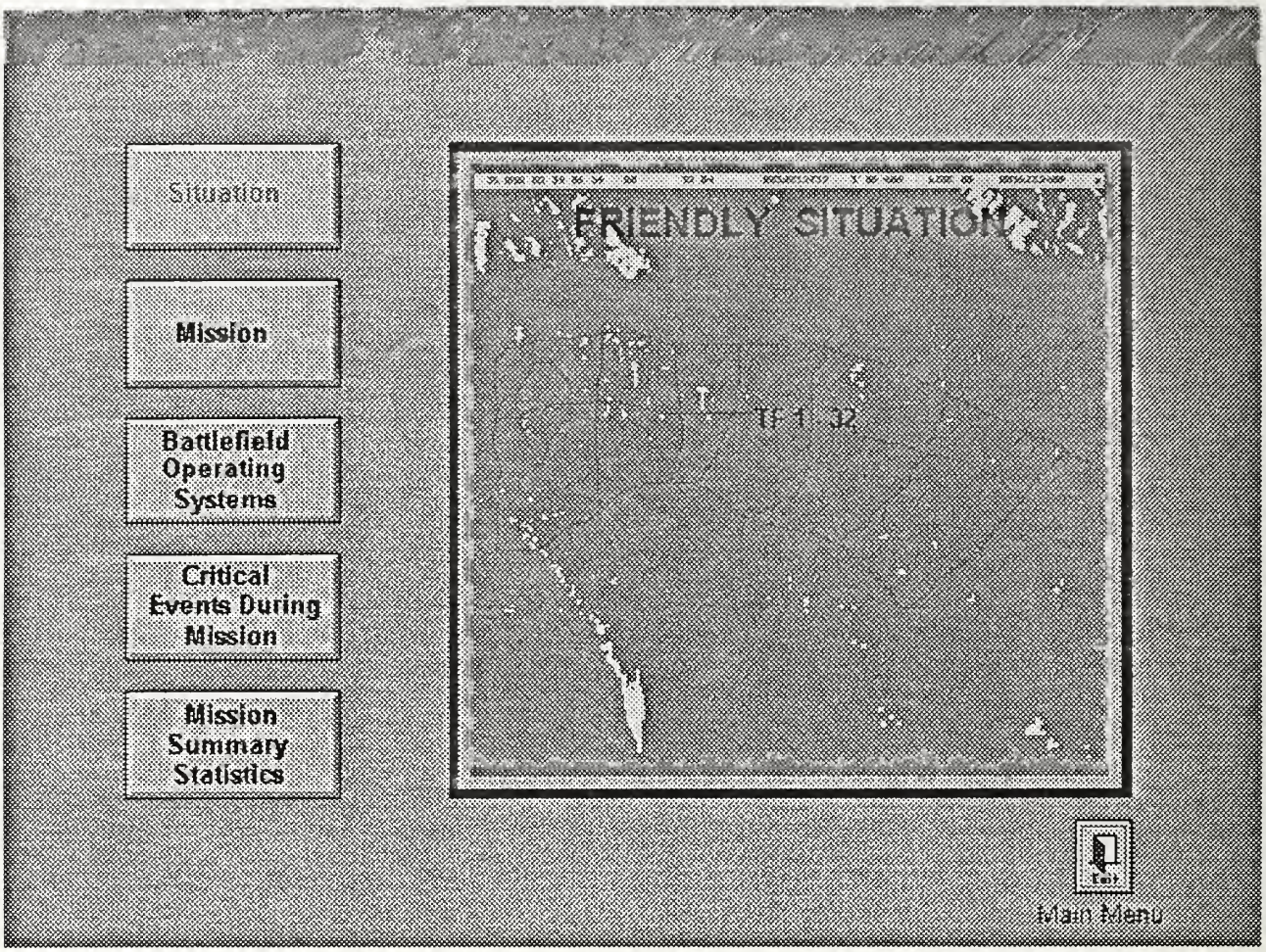


SITUTIN1.RLE



SITUTIN2.RLE



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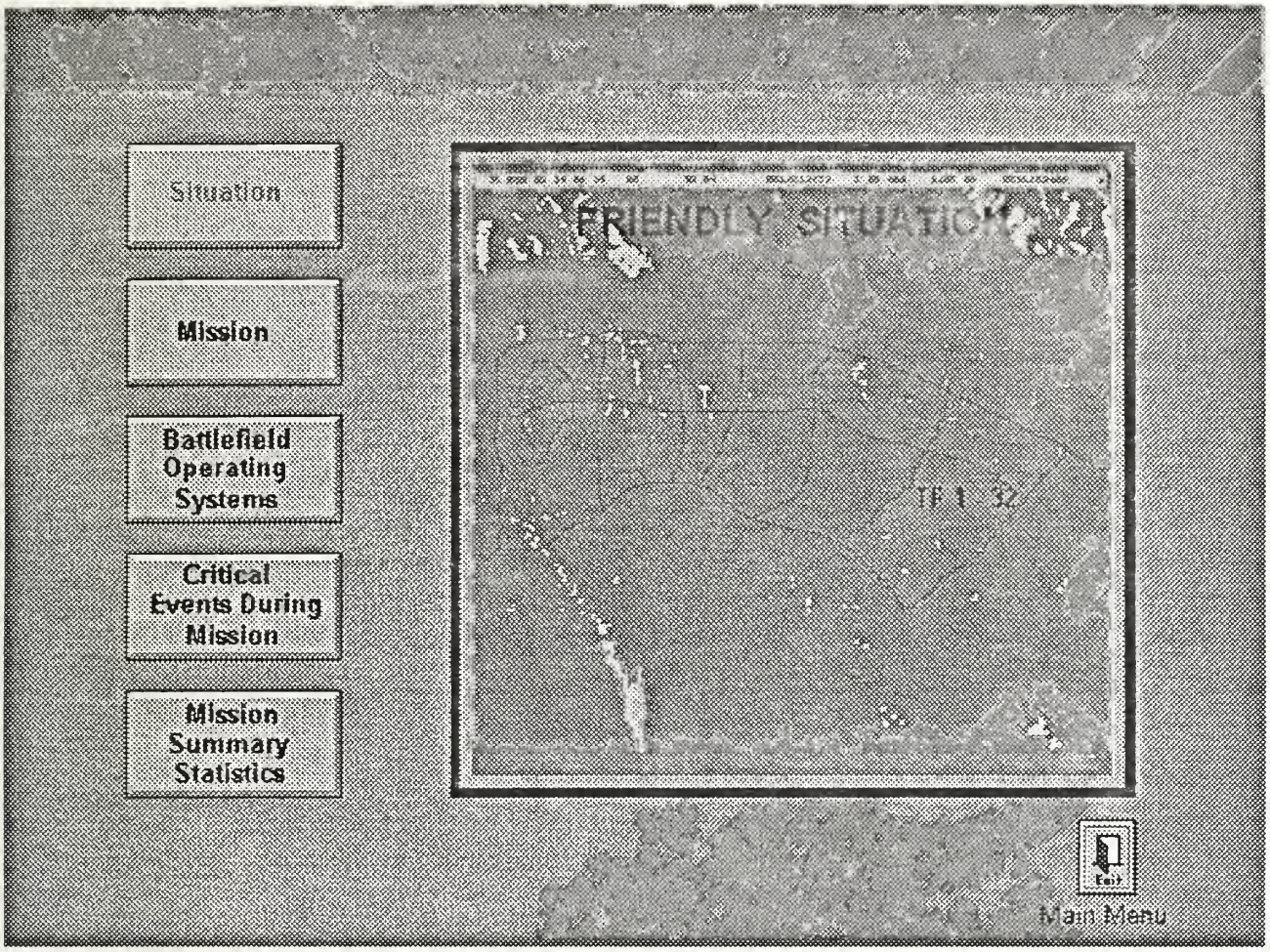

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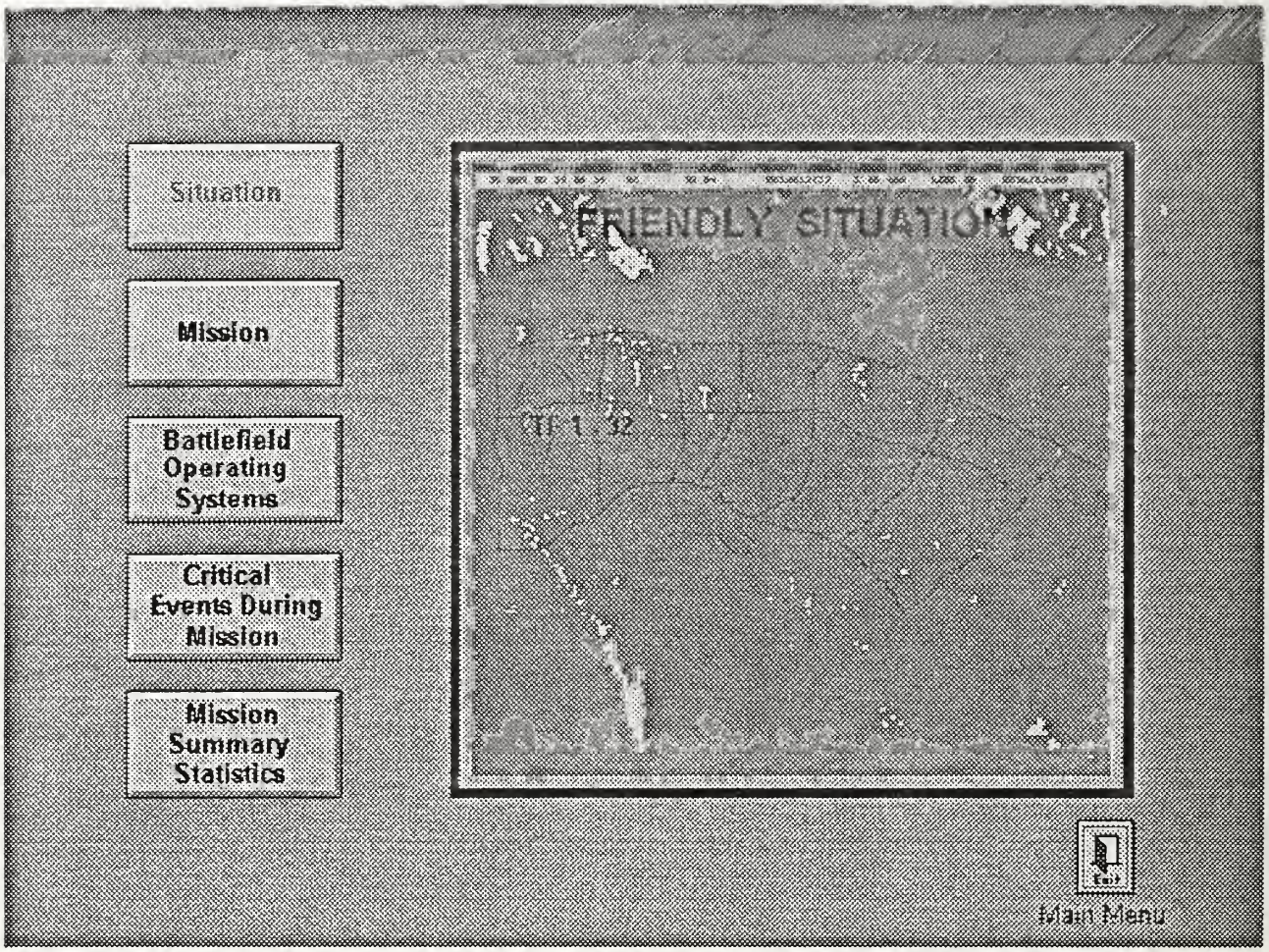
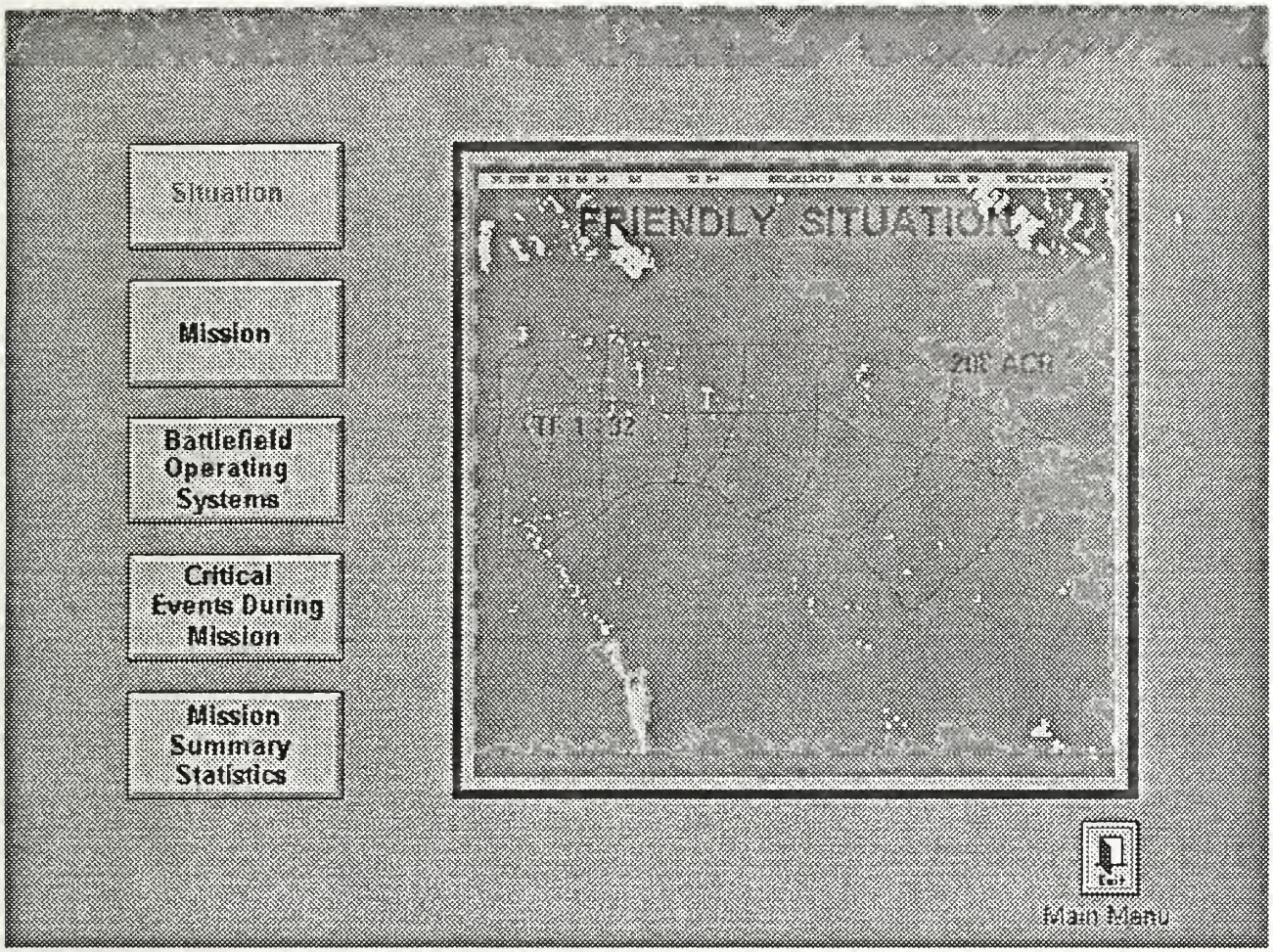
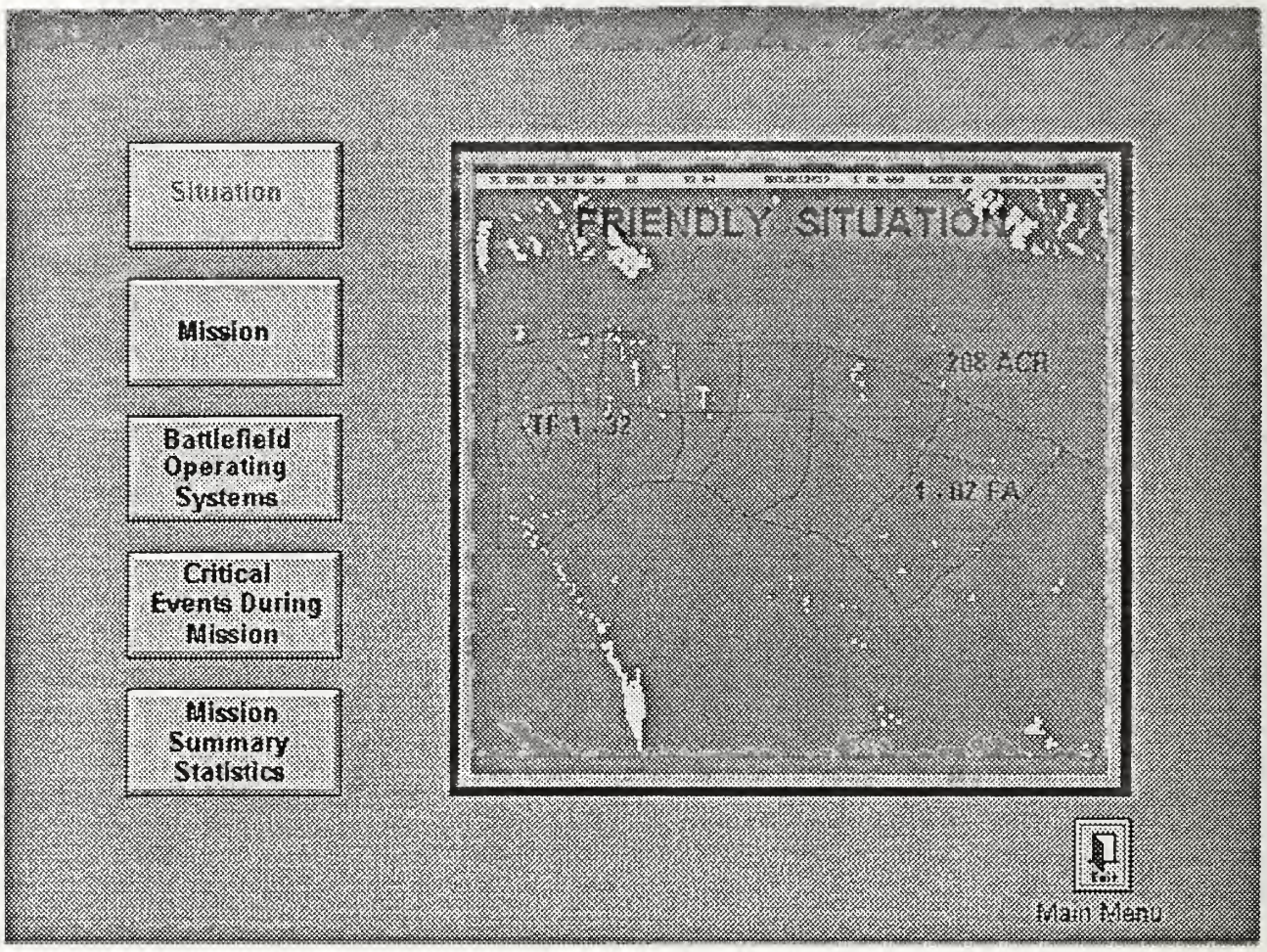


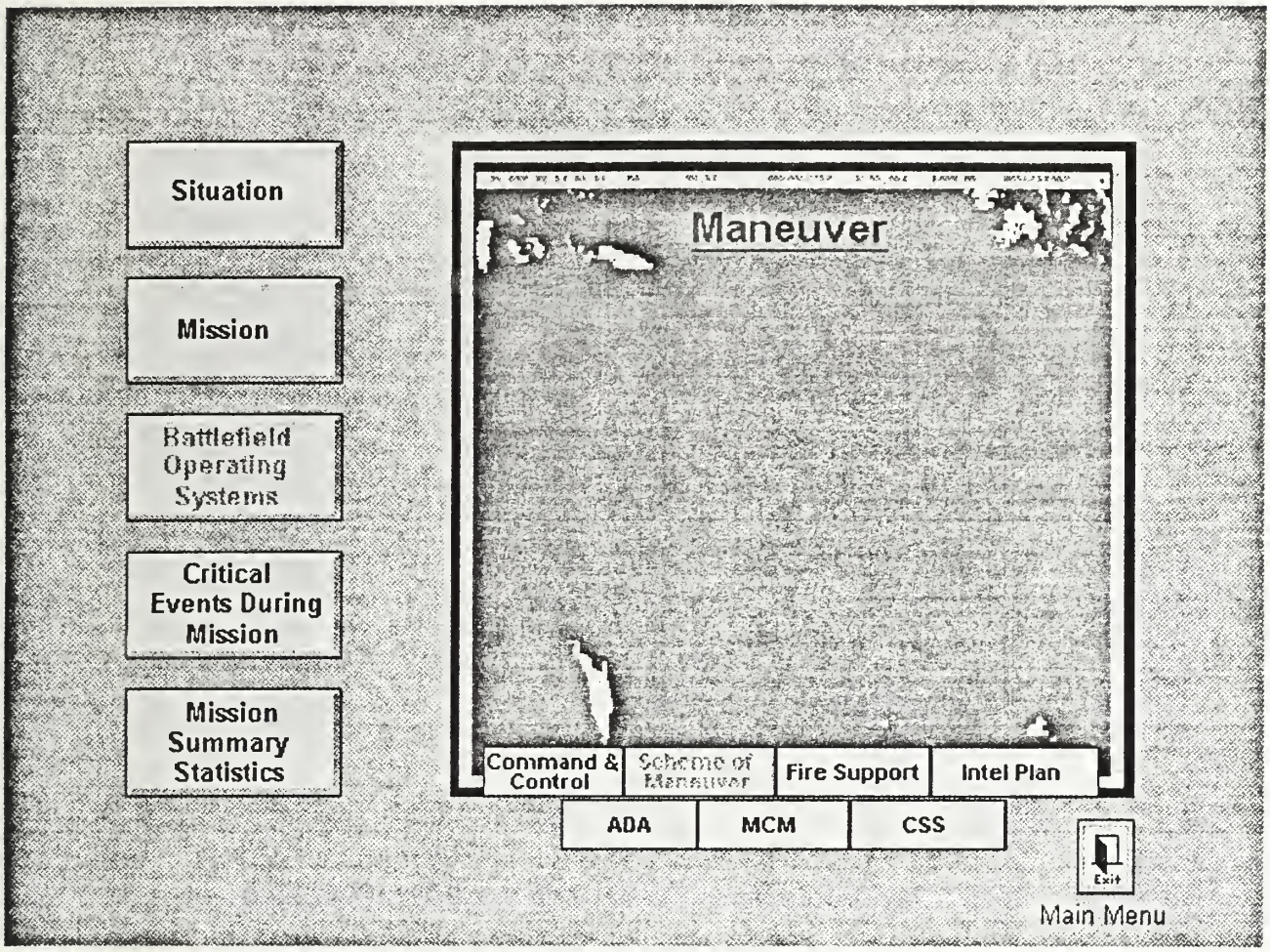
SITUTIN5.RLE



SITUTIN6.RLE



SITUTIN7.RLE


Situation
Mission
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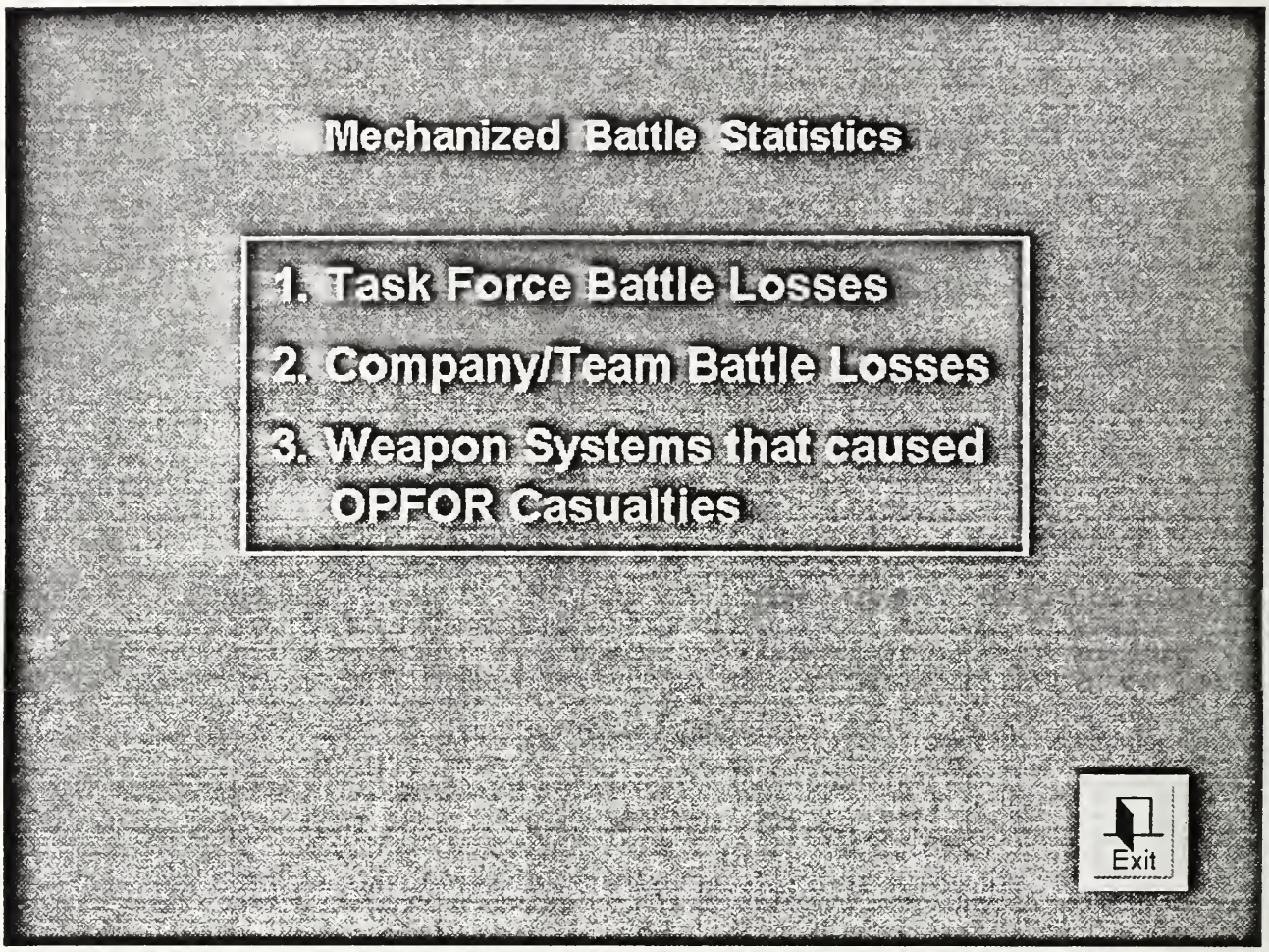
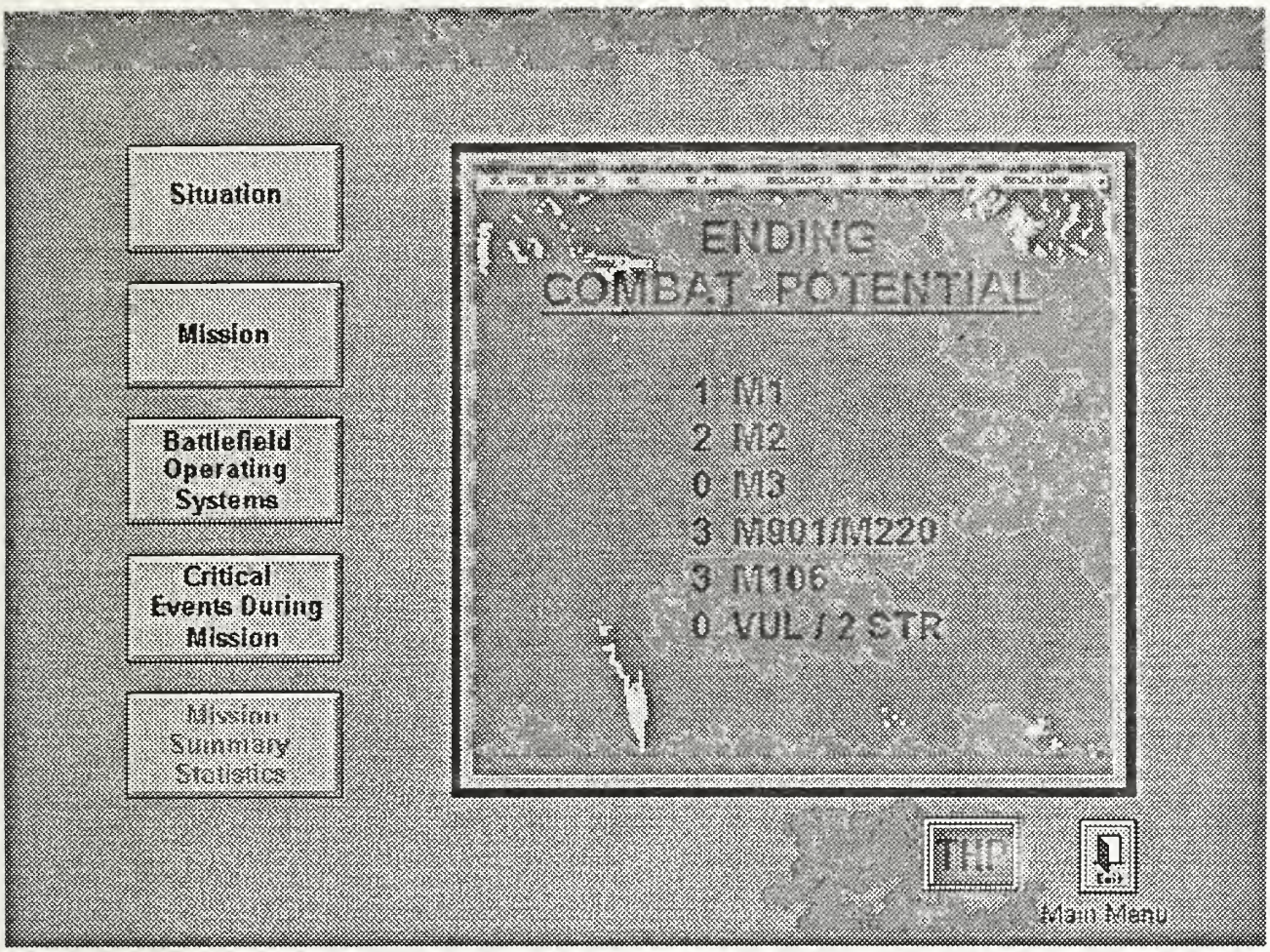
Critical Events During Mission
Mission Summary Statistics
Maneuver
Command & Control
Scheme of Maneuver
Fire Support
Intel Plan
ADA
MCM
CSS
Exit
Main Menu

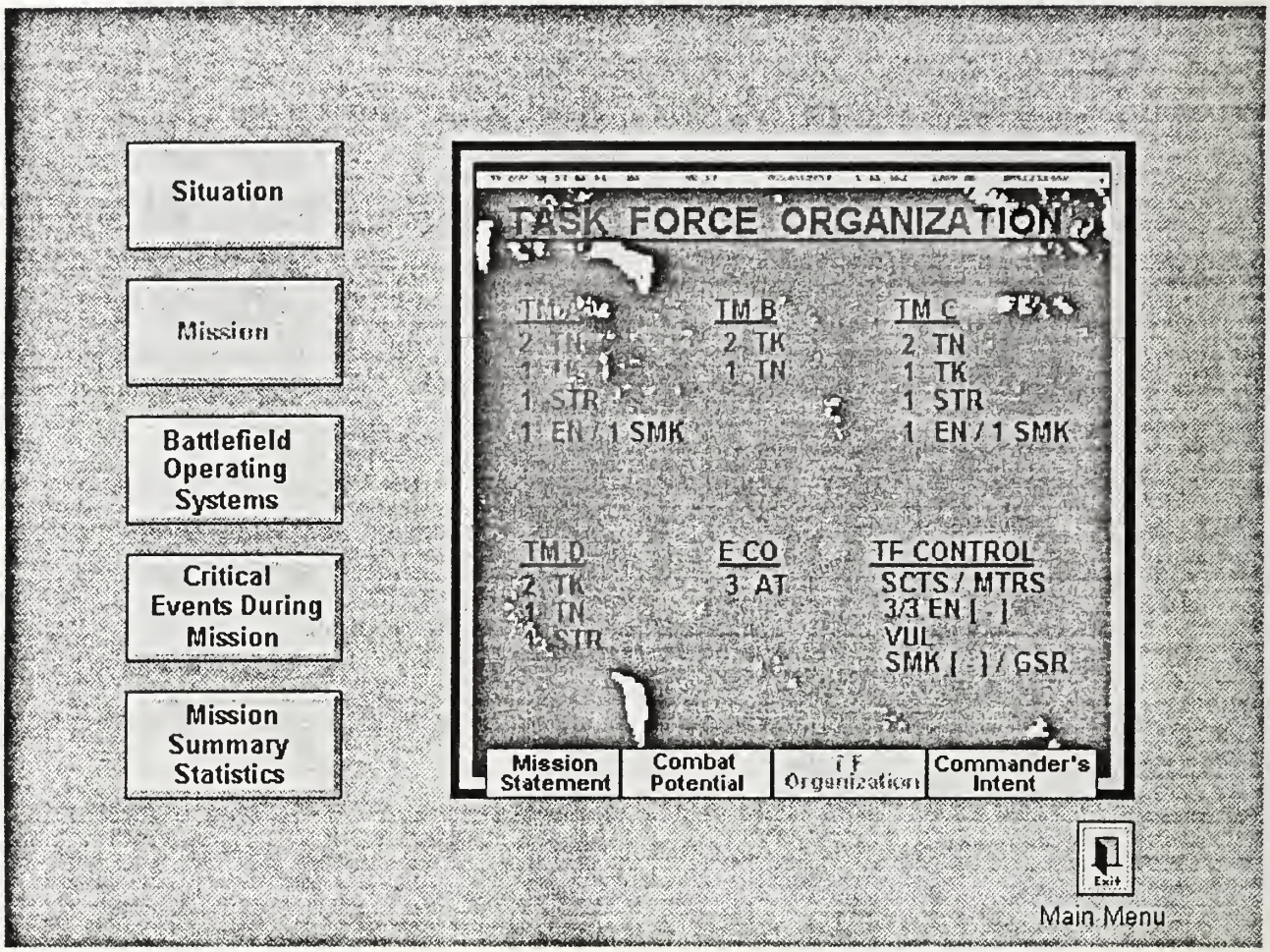
SMBOS.RLE


Mechanized Battle Statistics
1. Task Force Battle Losses
2. Company/Team Battle Losses
3. Weapon Systems that caused OPFOR Casualties
Exit

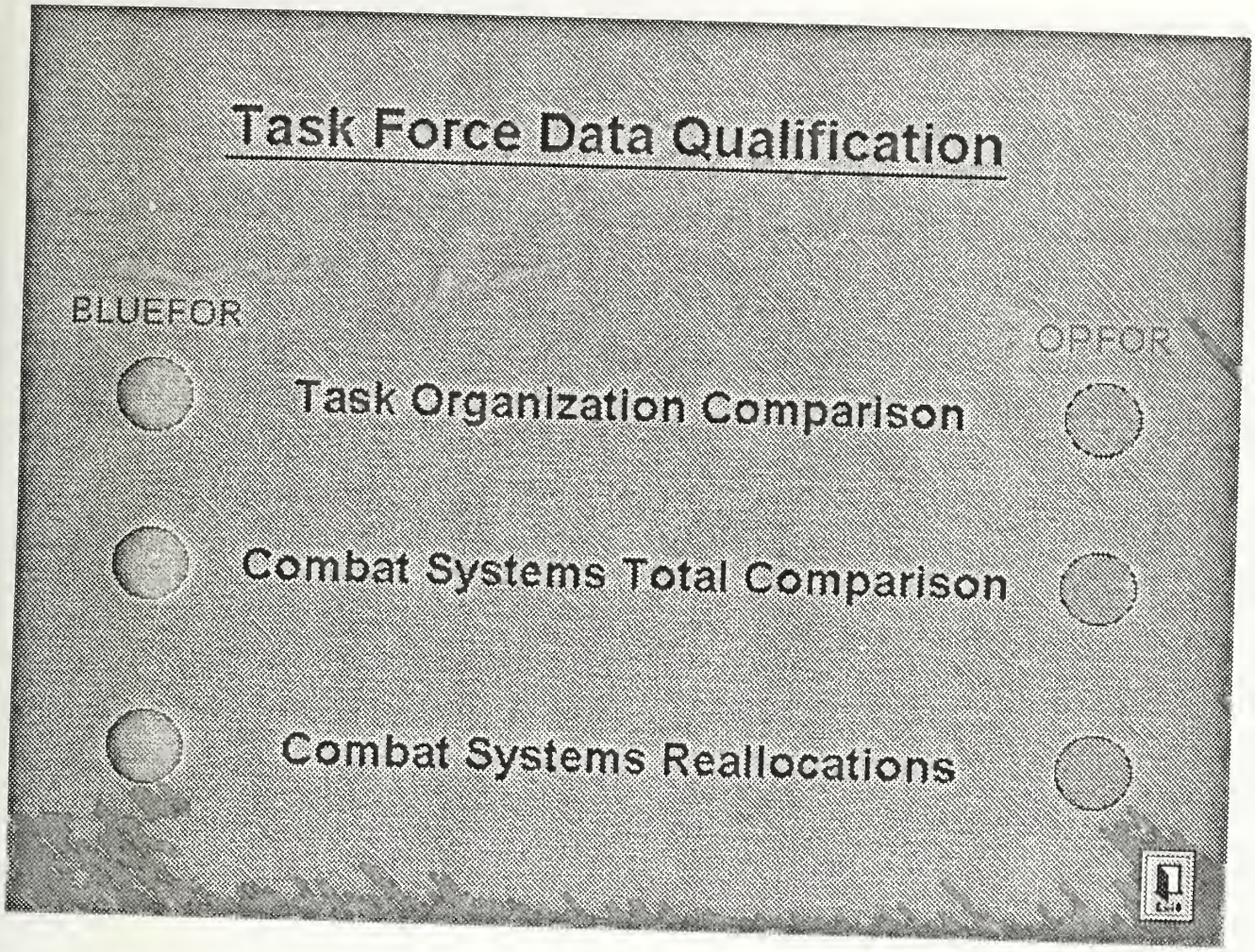
STATMENU.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
ENDING
COMBAT POTENTIAL
1 M1
2 M2
0 M3
3 M901/M220
3 M106
0 VUL / 2 STR
THP
Main Menu

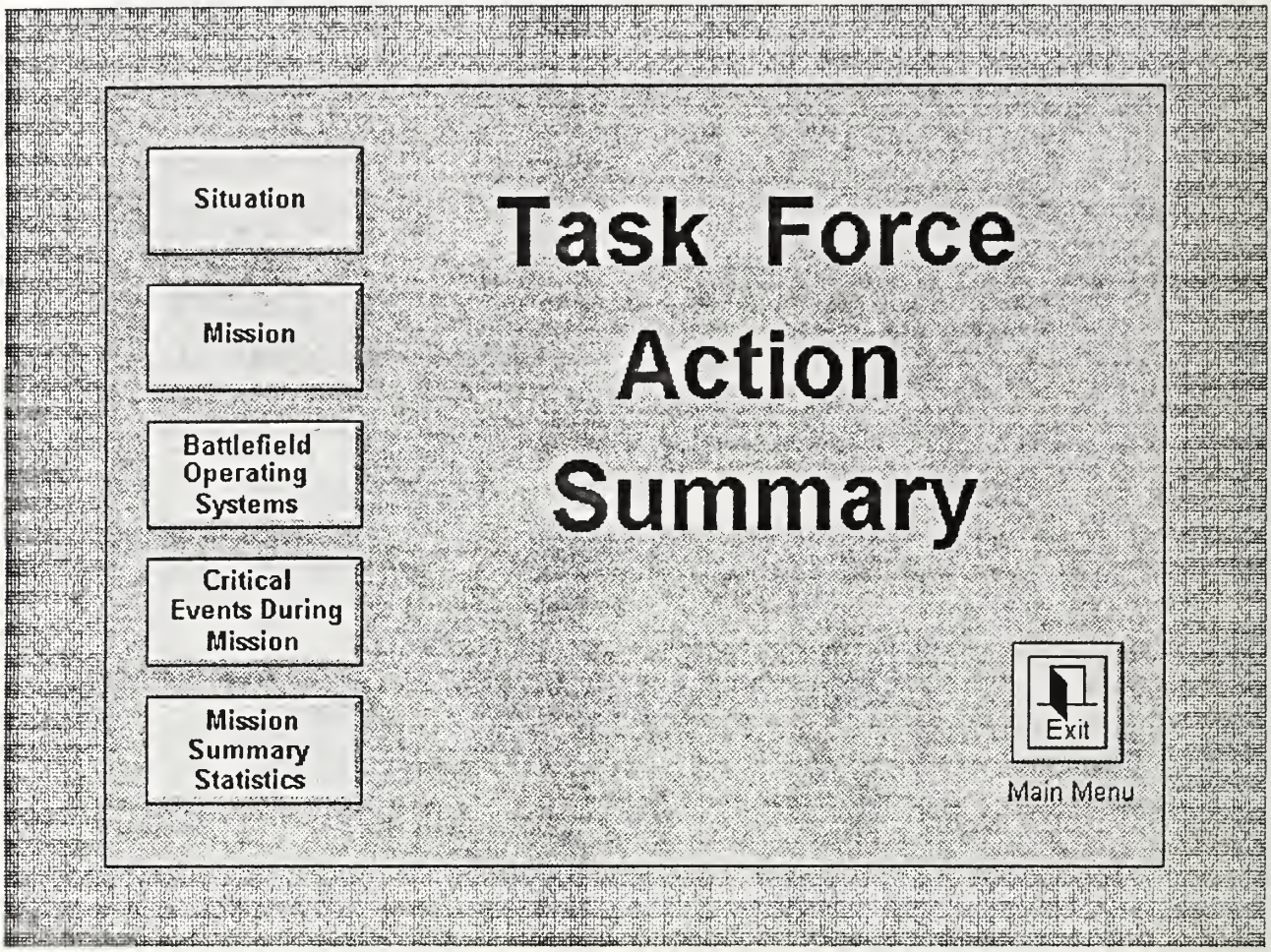
STATS.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
TASK FORCE ORGANIZATION
TM A
2 TK
1 TK
1 STR
1 EN / 1 SMK
TM B
2 TK
1 TN
TM C
2 TN
1 TK
1 STR
1 EN / 1 SMK
TM D
2 TK
1 TN
1 STR
E CO
3 AT
TF CONTROL
SCTS / MTRS
3/3 EN [ ]
VUL
SMK [ ] / GSR
Mission Statement
Combat Potential
TF Organization
Commander's Intent
Exit
Main Menu

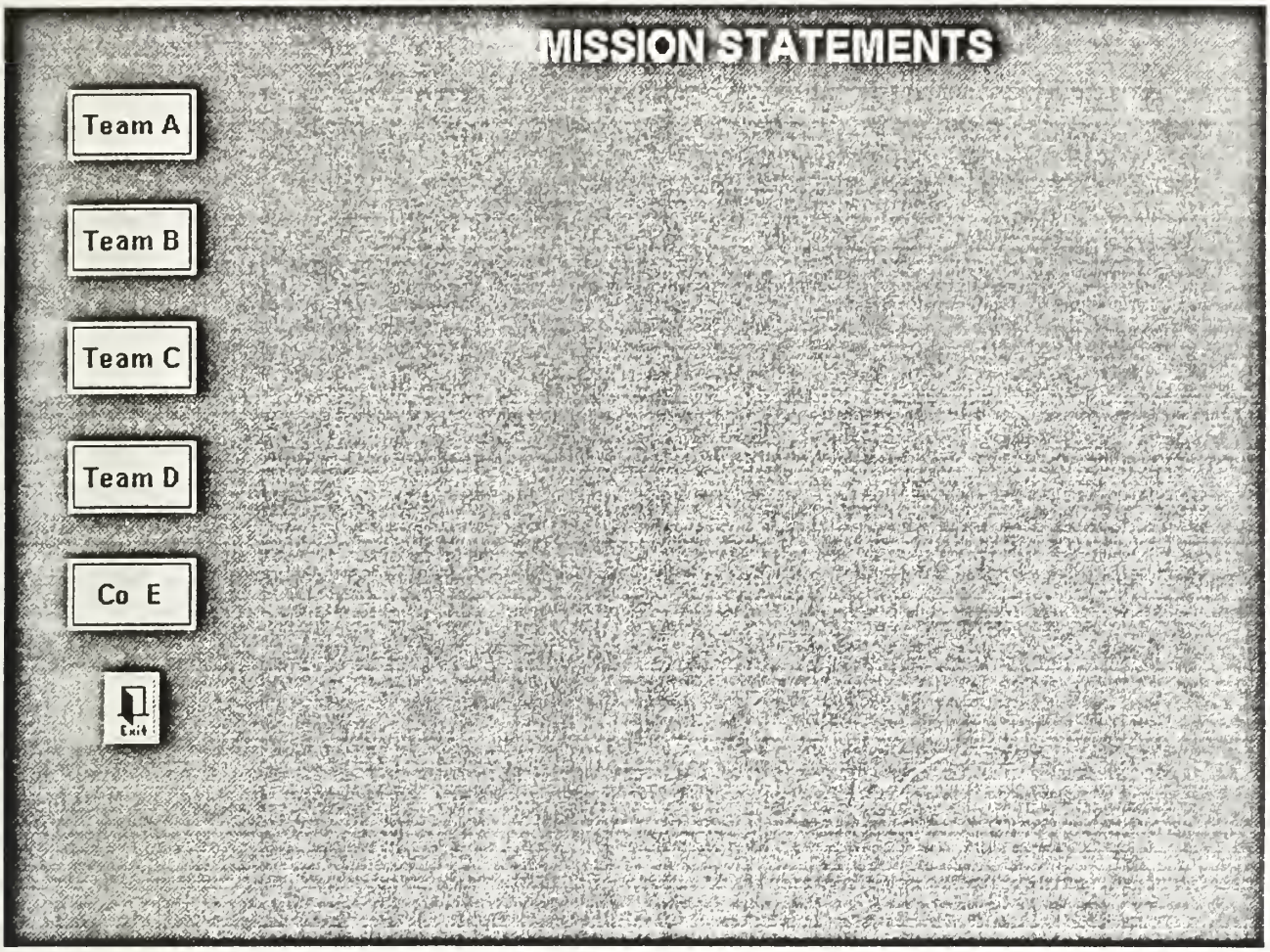
TASKFOR.RLE



TFDQMENU.RLE


Situation
Mission
Battlefield Operating Systems
Critical Events During Mission
Mission Summary Statistics
Task Force Action Summary
Exit
Main Menu

TFMENU.RLE



TMISSA.RLE

APPENDIX F. WAVE FILE LIST

File	Length (seconds)
ADABOS.WAV	14.63
FSBOS.WAV	4.45
INTENT.WAV	26.79
IPBOS.WAV	7.66
MCMBOS.WAV	12.58
MISSION.WAV	26.00
POTENTAL.WAV	11.09
SITUATIN.WAV	41.84
STATS.WAV	17.78
TFORG.WAV	2.78
WAGNER2.WAV	60.00

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